Telephony.

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STATE UTILITY REGULATION DEVELOPS INTERESTING NEW ANGLES

Developments at the Washington hearing and in connection with telephone rate cases in several states point to radical changes in state regulation of public service companies.

Probably the federal government will not interfere so much with state regulation—especially of communications—as was first supposed. After the senate committee ended its inquiry, the friends of the Couzens bill were found to be fewer than expected.

But the telephone rate cases pending in New York and Minnesota promise to lead to important changes in state regulation. One of the questions raised in these proceedings is: "What should be the role of a state utility commission?"

Should it function principally as an advocate of public rights against the utility company, in the character of a prosecutor? Or should it act as a judicial body, passing with the detachment of a court on the claims of the public and the counter claims of the company?

* * * *

It would seem impossible for a state commission to do both, and deal justly with both sides. Yet in Minnesota, the commission has been put in the position of a prosecutor, for Commissioner Laurisch cited the Tri-State Telephone & Telegraph Co. to appear and show why its rates should not be reduced.

An editorial in the St. Paul Pioneer Press, commenting on the situation, asks: "If this is the Railroad & Warehouse Commission's proper role, then what becomes of its character as a periodical body? Can Mr. Laurisch, having brought the original complaint, now act with his fellow commissioners as the disinterested and objectively-minded judge to decide whether the public has been a wronged party?"

That is a very reasonable question, and one that will cause the Minnesota commission some embarrassment if that body endorses and supports the action of the busy Mr. Laurisch. It is understood, however, that the majority of the commission are not in sympathy with his apparent desire to pose as the unterrified friend of the public.

* * * *

In New York, where the utility commission is in process of reorganization, Governor Roosevelt says the commission is not a "quasi-judicial body," and yet he names a man to head the state public service commission—M. R. Maltbie—who says that "Some of the functions are legislative, others quasi-judicial and others administrative."

As is plain to be seen, if a state commission were to abandon its judicial functions, and become simply the champion of the people against the service companies, this would not end the matter at all. There would be appeals from commission orders to the courts; and, if the state courts did not afford the necessary relief, no doubt the federal courts would be called upon to pass upon the controversy.

During the development of state regulation of utility service in the last 25 years, the general opinion has been established that a commission was a sort of arbitrator between consumers and company, holding the scales of justice so nicely balanced that the public obtained service at fair rates, and that allowed the company a reasonable return on the investment.

Of course, this ideal has not always been realized, and there have been not a few cases where the interests of both public and company have been neglected. In New York, the federal court took a hand to prevent injury to the company. In Minnesota we have a spectacle of a utility commissioner acting as a prosecutor and not as a judge.

That is a long way from the original conception that state regulation should arbitrate disputes between the public and the companies, and hold the scales so that both sides are fairly dealt with.

* * * *

"If the commission is not to be judicial, what becomes of state regulation?" asks the St. Paul Pioneer Press editor. "The state cannot set up a regulatory system that presumes to pass on the right and wrong of utility rates, and expect it to be more than a way station into the courts, if the whole basis of the regulation is special pleading against the utilities.

"On the other hand, if the state commission does not act as an advocate for the public, where will the consumers find legal and expert representatives competent

to present their side of the case against the high-priced ability of corporation specialists?"

The New York commission appointed to revise the state utility laws recommends the creation of the office of "public defender," who would represent the consumers before the commission and see that the rights of service users were protected. On the other hand, municipalities which engage in rate cases never seem to have trouble in getting expert lawyers, accountants and engineers to prepare their cases.

Chicago, for instance, has spent nearly half a million dollars in telephone litigation in the last eight years, and the city hall had no difficulty finding "experts" to represent the public for which it claimed to speak. New York City's expense along the same line will probably reach twice or three times that amount.

Of course the net results—to the public—were not all that might be desired, but the politicians and their "experts" were satisfied, although in Chicago a shortage of tax funds compelled them to wait for their pay.

* * * *

Telephone operators may sometimes think the company management puts undue emphasis on the importance of clear enunciation and pleasing voice tones, but every so often evidence appears that such effort is in the right direction. For instance, the dramatic critic of a Chicago newspaper had this to say recently in his column:

"A theatrical manager once asked me where he could find half a dozen girls who could speak clearly words of two or more syllables. When I told him to go to the telephone company, the poor cynic thought I was joking. In the shops, bazaars and tall buildings, you encounter English no clearer than your own. But lift the telephone receiver and listen to the priceless particularity with which you are thanked and your number passed on to the required exchange.

I was just on the point of suggesting a year's employment for all aspiring young histrions (which is a big word for stage people) when it occurred to me that the actor is more offensive to our ear than the actress, and that men make imperfect telephone operators, for they lack not only the needed patience and cheerfulness but the speed and sporting zest required for this really difficult and important job. But to the next girl who asks me how she can qualify for the stage I shall say: 'Go to 212 West Washington street and ask for Mr. Bell.'"

* * * *

A compliment like that, coming from such a quarter, should convince switchboard operators that training, especially with emphasis on the voice, is worth while.

COMING CONVENTIONS

Iowa Independent Telephone Association, Des Moines, Hotel Fort Des Moines, April 8, 9 and 10.

Ohio Independent Telephone Association, Columbus, Deshler - Wallick Hotel, April 15, 16 and 17.

Indiana Telephone Association, Indianapolis, Claypool Hotel, May 6 and 7.

Kansas Telephone Association, Topeka, Hotel Jayhawk, May 13, 14 and 15.

Pennsylvania State Telephone & Traffic Association, Penn-Harris Hotel, Harrisburg, May 13, 14 and 15.

Up-State Telephone Association of New York, Seneca Hotel, Rochester, May 21, 22 and 23.

The Telephone "Signed" for Sea Service

Establishment of Commercial Telephone Communication Between Stations on Land and Stations at Sea Marks Another Big Step in Remarkable Growth of the Telephone Since Its Discovery 54 Years Ago—Description of Installations

By Elmer I. Campbell

Before the telephone had celebrated its 54th birthday—and who considers himself old at 54—commercial telephone communication had been established between stations on land and stations at sea.

In two generations the scientific toy which Bell and Watson labored over in an attic workshop in Boston, had grown with a degree of speed unknown in any other branch of human endeavor.

It is a significant fact that shore-to-ship telephone service was started with the S. S. Leviathan, formerly the Vaterland, which was built by Germany in 1914. In the 15 years which have elapsed since the launching of the sister-ships Leviathan and Majestic, the two largest ships in the world, the shipping industry has, by comparison with the telephone industry, been almost at a standstill.

The much-heralded S. S. Bremen of the North German Lloyd Line, which is only slightly faster than the 23-year old Mauretania, is smaller than the Leviathan. During the years which have elapsed since the building of the Mauretania, the improvements in ocean travel have been almost negligible when compared with the advances in telephone "travel"; for those same years have witnessed remarkable forward strides in the telephone industry.

From less than four million telephones in the United States in 1907, the year the Mauretania made her maiden voyage, to more than 20 million today, is, in a word, the story of this remarkable, unprecedented growth.

In the intervening years we have watched such accomplishments as the placing in service of the first underground cable, the opening of transcontinental lines the development of simultaneous broadcasting by wire-connected radio stations, the use of telephone typewriters, the transmission of pictures by wire, the opening of commercial transatlantic telephony—and now, as still another forward step in the telephone's rapid progress, we have shore-to-ship telephone service, enabling telephone subscribers located anywhere in the United States to talk with the ships at sea.

This new service, which was established on the Leviathan and which is being extended rapidly to other ships of other lines, was officially opened on December 8, 1929, by President Gifford of the American Telephone & Telegraph Co. In the first conversation, after formal felicitations had passed between Mr. Gifford and Commodore Cunningham of the Leviathan, the telephone was passed around to the guests who had come to witness the inauguration of this epoch-making service. The rate for this service was established at $7 a minute; and one of the first commercial calls made lasted five minutes.

Service on Shipboard.

Every reader of TELEPHONY is familiar with the various types of telephone facilities available for use on land; but relatively few are in touch with conditions on board the ships that ply the waters of the seven seas.

The ship, unlike any land unit, must of necessity be self-contained and self-

supporting. When the hatches are closed and the whistle blows its long farewell blast, the ship becomes entirely independent. Frequently, famous ships like the Leviathan, Bremen, Aquitania, Ile de France, Paris, Berengaria, etc., are referred to as "floating hotels." And, indeed, they are. Such ships are equipped with all of the devices and comforts known to the best hostelries. On board these ships one finds elevators, swimming pools, gymnasiums, ballrooms, and three or four classes of restaurants. They afford their guests such amusements as dancing, deck-golf, tennis, squash, handball, and now—talking movies.

But in one sense of the word, modern liners are more than floating hotels. While a dry land hotel may, and usually does, receive its supplies of gas and electricity from outside sources, the ocean liner must not only generate its own current and heat, but must also carry enormous quantities of fresh water for drinking and bathing purposes. Whereas the land hotel may purchase fresh food supplies from day to day, the average ocean-going vessel must have on hand at least a week's supply of food, and must have the facilities for storing and preparing food for more than 2,000 persons during one voyage.

But like a huge hotel the big ships that go down to sea must also be operated on a business-like basis. The captain on the bridge may wish to communicate with the chief engineer, who is located in his office adjacent to the engine room. He lifts his receiver and a switchboard attendant answers with "Number, please?" The captain gives the chief engineer's extension number and is connected immediately.

And, as in hotels, the comfort of the guests must be considered; the passengers must be placed on "speaking terms" with one another. For example, Mr. Zilch and his wife from the Bronx decide to have a little informal party of two tables of bridge that evening in their private drawing room. They call up the Joneses from Toledo, who are located on the A deck, the Smiths from Buffalo who are forward on the B deck and the Blacks from Atlanta who are on the starboard side of the boat deck; and invite them over, or up or down as the case may be, and thereby save themselves no end of effort. With modern liners extending up to 900 feet in length, the telephone saves many steps.

The telephone on shipboard also expedites service. Instead of ringing a bell to summon a steward to bring a bowl of cracked ice, or to page one's husband in the smoking room, the modern voyageur need only lift her (or his) telephone receiver and make the request known to the operator who will connect him with the smoking room, the steward, the card-room, bar, or what would you like?

Just as America has taken the lead in the provision of new types of telephone service, so the Leviathan, flagship of the United States Lines, was the first vessel in which a complete intercommunicating system was installed. But even this installation was not made until the Leviathan was completely renovated after the close of the World War, and at a cost of $8,200,000.

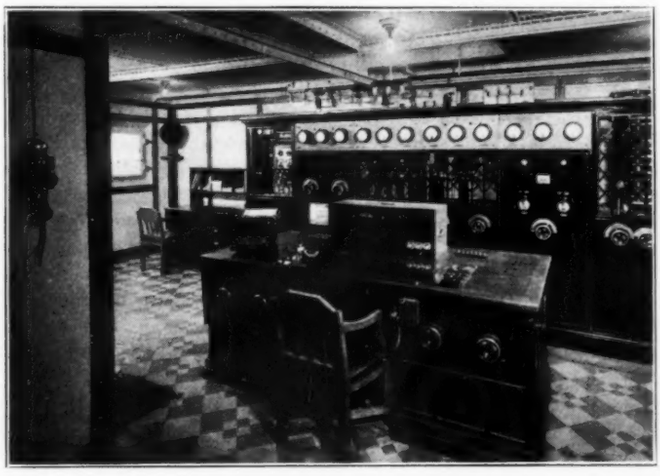
Although the expenditures for telephone equipment were infinitesimal when compared with the total cost, the task of installing the service was none the less difficult.

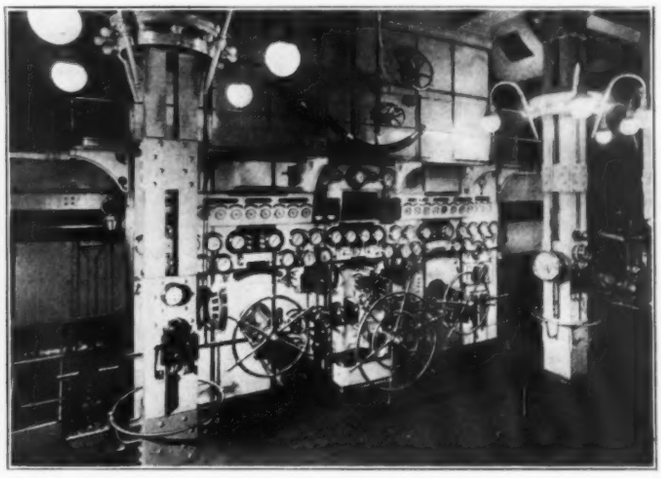
In the first place, the two-position telephone switchboard had to be built to meet the most rigid marine specifications, with special safeguards against salt air and moisture. This meant special treatment for both the wood and metal parts; whereas iron parts could be used on a regular job, it was necessary to use brass bolts, screws and washers for mounting the apparatus on this seagoing P. B. X. The switchboard wiring and the relay coils were specially wound and insulated, and every precaution taken to insure uninterrupted service regardless of the pitch and toss of the vessel.

The telephone wiring developed difficulties not encountered in the wiring of an office building or hotel. In the first place the power wiring was pulled through conduit as a safeguard against fire. Deck terminals (similar, of course, to "floor terminals") were established at logical distributing points and the station leads carried to the various first-class staterooms, the officers' quarters and public rooms.

To compensate for vibration and the movement of the ship and the consequent chaffing, it was necessary to secure all of the cables and leads very securely, and as it was necessary to drill through iron beams every few feet, further precaution had to be used in the form of lead bushings to prevent chaffing at the holes.

When the job was completed, 600 stations were connected to the ship's switchboard, and provisions were made for land connections at the ports of call.





The Radio Operator's Office on the Ile de France. Notice the Convenient "Hang-Up" Instrument on the Front of the Desk.—The Engine Room on the Ile de France. Note the Double Receiver on the Wall Telephone in the Left Foreground.

In addition to the usual switchboard service there were also installed a loud-speaking system for the fire and engine rooms, a loud-speaking maneuvering circuit and a small inter-communicating circuit for the use of the capitan, chief engineer and radio operator.

Among her other refinements, the Leviathan is now fitted with a stock broker's office equipped with a quotation board. The quotations are received from New York by radio on a short wave length.

Telephones on German Ships.

On the Bremen, newest and speediest of ocean liners, the telephone equipment is of Siemens & Halske design and manufacture and is of both the dial and mural types. Officers' quarters are fitted with dial sets consisting of a hand-set type receiver and transmitter super-imposed on a bell-box. A key switch on the box enables the user to have his calls automatically routed to the switchboard, located behind the main desk on the A deck when he is absent from his stateroom or office.

First-class passengers occupying de luxe

accommodations are provided with telephones beautifully finished to harmonize with the color scheme of their rooms. Staterooms finished in orchid are equipped with a telephone in a beautiful pastel shade of orchid. If the room is done in Nile green, the telephone carries out the color even to the silk cord. And on the Bremen, the de luxe rooms are nothing short of regal! Large suites consist of two and three bedrooms to accommodate an entire family, a private drawing room, one or two baths, a trunk room and several roomy clothes closets. Floors are thickly carpeted, the lighting is indirect and tasteful prints and etchings adorn the walls.

The Commander's Stateroom on the SS. Ile de France Showing His Two Bedside Telephones. One Communicates with the Switchboard and the Other with the Navigation Bridge.

The swimming pool on this palatial liner is also a thing of rare beauty. The pool itself is set in a room finished entirely in Mosaic work in exotic blues and greens. Surrounding the pool are dressing rooms and special rooms for Swedish, Russian and Turkish baths and massages; rubbing rooms, exercise rooms, etc.

Just a few feet from the pool is a tiny bar, in case you need a bracer before or after taking your morning plunge—or both! Recessed in the wall of the passageway leading to the pool is the ubiquitous telephone! Why a telephone is needed there your scribe did not learn. But conjecture leads one to the thought that possibly American husbands have a habit of loitering at the nearby bar after their morning dip and that a telephone call from Friend Wife is needed to get them to breakfast on time!

The switchboard on the Bremen is of the two-panel, one-position type and is equipped with 180 jacks and eight double-lamp supervision cords. As on many of the ocean-going liners, the switchboard attendants speak many languages. On board the Bremen you may make known your wishes in English, French or German without danger of not being understood.

French Line Service.

On board the S. S. Paris of the French Line, one will find a telephone system of exotic design. The board itself, which was built by the Association Des Ouviers en Instruments de Precision-Paris, is beautifully finished in Okuome wood, which resembles rosewood. It is of single-position, two-panel design and is equipped with 60 jacks and ten double-lamp supervision cords. A supervisory buzzer box, affixed to the wall adjacent to the switchboard, indicates that the called sub-set bell is ringing, although just why it should make so much noise the operator could not explain.

In view of the fact that land service in Havre, France, is of the automatic type, the board is equipped with a dial for handling shore service in France as well as with the necessary jack and key equipment for handling shore calls of the manual type in New York City.

In addition to the switchboard service there are private automatic circuits for the use of certain of the officers.

The Ile de France, flagship of the French Line, although newer than the Paris is really older in appointments by virtue of the fact that following the fire which gutted her interior last August, the Paris was renovated and her telephone system enlarged.

Telephone service for passengers on the Ile de France is confined to the suites de luxe; but, as on all of the other important ocean liners, adequate communication facilities are provided for the use of the officers.

The switchboard on this "Queen of the Atlantic" was built by the French concern, Thomson-Houston, and is fitted with 30 jacks and 7 supervision cords. Three trunk lines connect the board with the shore in New York and two in Havre. Although telephone traffic is not considered of special importance on shipboard, a traffic study on the Ile de France revealed the fact that this tiny switchboard handled an average of 900 calls per day while at sea.

The White Star Veteran.

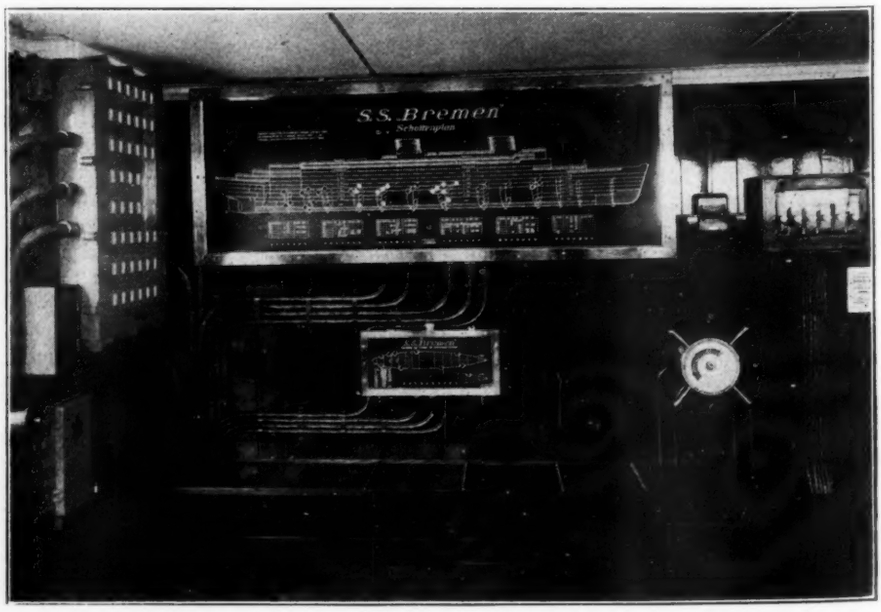
On the veteran White Star Liner, Olympic, now approaching her 21st birthday, telephone equipment is confined to the use of the officers. The switchboard, which was built by Alfred Graham & Co., London, although standing more than seven feet high, is fitted with only 49 jacks in seven strips of seven jacks each. Using a half-dozen pairs of plugs the cockney attendant has rather an easy time of it in setting-up casual connections. He "'oped we should 'ave a new one soon!"

From the foregoing it will be seen that there is some difference of opinion among ship owners as to the necessity of telephone service for passengers. The shiny, new all-American Pennsylvania of the Panama-Pacific Line, the largest commercial vessel ever built in the United States, has a very limited intercommunicating system, while coast-wise steamers built almost two decades ago are fully equipped with telephones in every room.

Yachts, Too!

The advent of ship-to-shore and ship-to-ship telephone service will probably do more than anything else to speed up the installation of adequate telephone facilities on shipboard, and American manufacturers may well expect to profit by activity along this line.

In the pleasure craft field, the most in-



A Handy Wall Set on the Right in One of the Control Rooms on the Bremen.

teresting installation of all time is that made by Charles F. Kettering, president of the General Motors Research Laboratories, on his new yacht, the Olive K. Mr. Kettering, who is often referred to as the "Steinmetz of General Motors," has incorporated into the communication system of the Olive K the results of his own experimental work.

Although the Olive K boasts only two decks, she represents foot for foot, more solid comfort than many of her larger sisters. In every room there is a telephone, which is painted to harmonize with the color scheme of that particular room. The installation is of the Strowger P-A-X type and represents some of Mr. Kettering's own ideas on how flexible a telephone system should be.

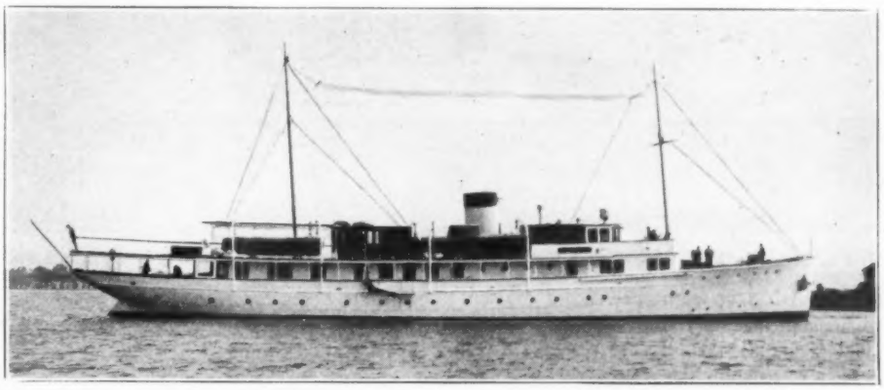
By merely dialing the correct number, a person in any of the six staterooms may have any of ten phonograph records played or be automtaically tuned-in on any one of the number of radio stations. In either case, the music comes to him through a loudspeaker installed in the room in which he is sitting.

The operation is as follows: Any guest, wishing music, switches on the loudspeaker in his room. Hearing nothing, he knows that the device is not being used by anyone. Deciding that he would like phonograph music, he consults the lists beside his telephone. One of these lists is for phonograph records, and consists of a list of ten records which have been selected and placed on the machine for that day.

Opposite each record is a number. By removing the receiver of the P-A-X monophone set, and dialing that number, that record is automatically started on the machine. He waits a few seconds and hangs up. The music of the record comes through the loudspeaker, the volume of which may be controlled by a knob close at hand. The machine automatically shuts off when the piece is finished.

The second list consists of radio stations, selected for being close enough so that the ship is within receiving distance, and for having desirable programs. By lifting the monophone receiver and dialing the number opposite the station desired, the broadcast from that station will come in on the loudspeaker. Either the records or the broadcast may be shut off immediately by dialing "13."

In addition to this novel and interesting feature, the P-A-X provides immediate telephone service to every part of this 167-foot yacht.



C. F. Kettering's Novel Yacht, the Olive K, Which Contains the Latest Developments in Inter-Communication.

The telephone equipment on most of the other important yachts of the world is confined to the use of the skipper and the other officers.

On the Pacific Coast.

Up to this point our story has dealt only with transatlantic liners and Atlantic Coast shipping, but the steamship lanes of the Pacific Ocean are equally important. The steamship service between California and Hawaii and Japan affords the traveler just as comfortable and luxurious accommodations as he will find on the Atlantic.

One of the most popular steamers in the Los Angeles-Hawaii service is the S. S. City of Honolulu, which is fitted with a single-position, two-panel switchboard of Kellogg manufacture. To this board are connected more than 300 stations for the convenience of first-class passengers and officers.

As is the case on the Atlantic, switchboard attendants are required to speak languages other than English, and the American telephone-user, like Dom Pedro of old, is startled to hear that his telephone may speak to him in some dialect of the South Seas!

Another interesting installation on a Pacific Coast ship is to be found in the S. S. Malolo of the Matson Line, which sails from San Francisco to Hawaii. On this beautiful ship, known as the "Queen of the Pacific," the Western Electric Co. installed, in 1927, a 340-line, two-position No. 1550 P.B.X., to which were connected 323 stations.

An interesting sidelight on this installation concerns the fact that after the work was completed at the shipyards in New York, the Malolo steamed down the Atlantic Coast for her trial runs. On the way back to New York she collided with a Norwegian steamship and before she could be placed in service on the Pacific, it was necessary to spend another half-million dollars on repairs. Although there were 36 feet of water in her engine-room, the newly-installed telephone system was not injured by the collision.

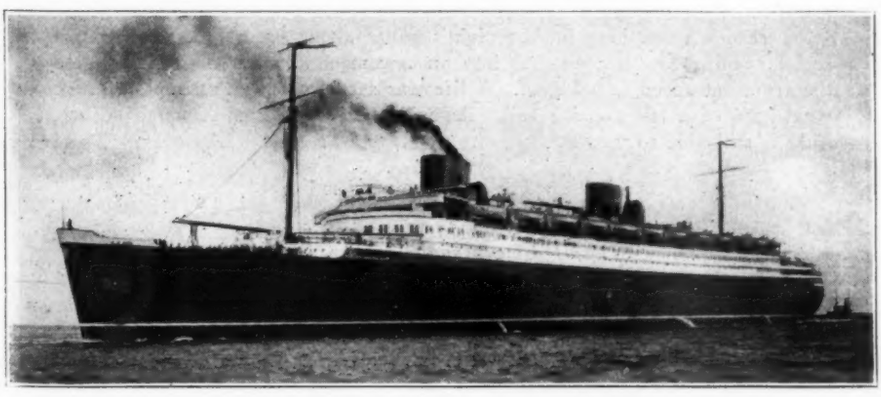
And on the Great Lakes.

No story of American shipping would be complete without adequate mention of the Great Lakes. There the bulk of the world's grain is carried to market and there coal and iron ore, farm and dairy products are transported over the vast expanses of these important inland waterways.

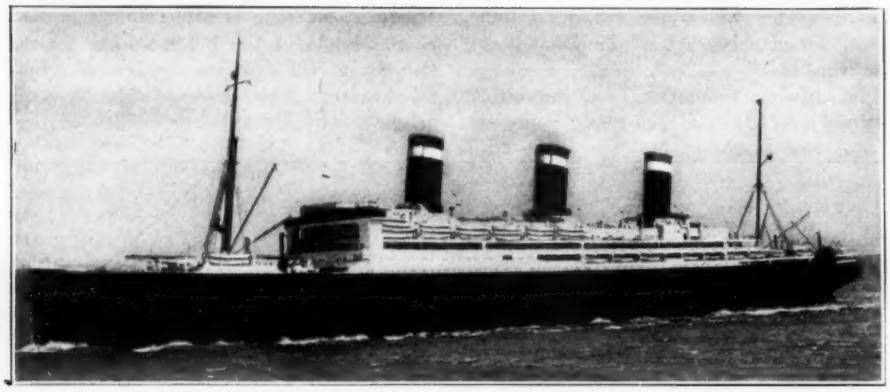
Mariners on the Great Lakes are as familiar with the name "Ford" as are traffic cops in the Chicago loop, and it is not surprising to learn that Henry Ford was one of the leaders in the modernization of lake freighters. His huge vessels, Benson Ford and Henry Ford II, are both equipped with automatic intercommunication systems of P-A-X design. Before sailing for South American waters, the Ford ship Lake Ormoc was also fitted with a dial intercommunicating system of 12 stations.

In addition to the growing importance of telephone systems on freight and passenger ships the world over, there is a promising market for telephone equipment manufacturers in supplying naval vessels both at home and abroad.

One of the most interesting naval contracts to be awarded recently was that calling for the installation of Strowger



The S.S. Bremen, the Fastest Liner Afloat.



The S. S. Leviathan, Flagship of the American Merchant Marine and World's Largest Ship.

type P-A-X's on eight new scout cruisers to be launched by the U. S. Navy during 1930 and 1931.

Unquestionably the telephone will assume greater importance on the sea and in the air until the time comes when anyone, anywhere, on land, on sea or in the air, will be able to talk to anyone else, anywhere at any time—by telephone!

Kansas District Meetings Scheduled This Month and Next.

The Kansas Telephone Association has scheduled a number of district meetings to be held during March and April. They are as follows: March 25, Osawatomie, Kansas Telephone Co.; March 26, Girard, Crawford Telephone & Telegraph Co.; March 27, Mulvane, Arkansas Valley Telephone Co.; March 28, Marion, Marion Mutual Telephone Co.; March 31, Effingham, Northern Kansas Telephone Co.; April 1, Miltonvale, Miltonvale Telephone Co.; April 2, Stockton, United Telephone Co.; April 3, Ellinwood, Ellinwood Telephones Exchange and April 4, Pratt, Southwest Telephone Co.

Holding Company Control Sought in New York Legislature.

A bill to extend the jurisdiction of the New York Public Service Commission over holding companies, management and service corporations and all other affiliated interests deriving any revenue from operating utilities other than dividends on stock and interest on bonds has been introduced in the legislature by Senator Knight, chairman of the commission on revision of the law, and Assemblyman Stone, vice-chairman.

The provisions of the bill include any person or corporation "exercising any substantial influence over the policies or actions" of an operating utility.

Every corporation having "one or more officers, or one or more directors in common with a utility corporation," and an owner or chain co-owner of 10 per cent of the voting stock of a utility, fall within the category of "affiliated interests."

The bill gives the commission access to the accounts of all these affiliated interests and requires all management and service contracts hereafter signed to be submitted to it for approval.

The Knight commission sent 11 more bills to the legislature on March 14 to tighten up the regulation of public utilities.

One clause, expected to give the public service commission a firmer control over utility mergers, recurs continually in most of the bills.

This clause declares that the commission is not to give its approval to transfer of franchises or stocks, unless it is "affirmatively shown that the acquisition is in the public interest."

One of the bills adds telegraph and telephone corporations to the other utilities which must get the authorization of the commission to take over the capital stock of any similar corporation. Another measure would make all telephone companies, having a property value of less than $10,100, subject to commission jurisdiction.

A TAIL OF WOE

By Miss Anne Barnes,

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

I have been thinking quite a bit lately about the folks who worry and those who do not.

The ones who are given to worry are quite a trial and problem. We should be willing to help anyone who is in trouble, when we can; but it is difficult, sometimes, to distinguish between the one who really needs to be helped over a hill, and the one who takes his worries out for an airing at every opportunity. We have to keep in mind that the noisiest wheel on a cart is not carrying any greater load than the other three.

Why allow oneself to be tied to the tail of another's trouble kite? The tail is the smallest part of a kite, and it is tied on last. If there were no kite to fly, there would be no use for a tail. The tail is just a follower. And it is the tail that usually gets mixed up with trees and wires.

How we dislike being dragged into a mixup along with someone's trouble kite!

There are two sides to every trouble—Jim's side and Bill's. And they are both our friends until . . . We don't mean to take sides with Jim when we sympathize with him as he relates his tale of woe. But, likely, we commit ourselves by remarking that we are surprised that Bill, etc., etc. All unconsciously we become Jim's ally, and an indisputable part of his trouble kite. We are sometimes dragged into the most miserable tangle with our friend Bill, and we cannot seem to clear ourselves with him, no matter whether he says much or little.

There is an old saying to this effect: "The proof of the trouble is in the string."

What more convincing proof needs Jim to feel that he has been treated unfairly by Bill than that of our expressions of sympathy dangling from his (Jim's) trouble kite; and he relentlessly drags us into trouble with Bill to prove it.

I read a news item in last night's paper about some folks, enjoying a social evening together, getting into an argument about a dog's tail. And the argument ended in a killing. A life was sacrificed in an attempt to prove what kind of a tail the dog had. Regardless of what kind of a tail he has, Fido is still able to wag it.

"Small good it does to fume and fret
And worry over trifles.
Too much of gloom like ashes wet
The fire of courage stifles.

"Let's stir the fires of faith and keep
The coals of courage glowing,
And all the secret times we weep,
Let no one else be knowing."

—Edgar A. Guest.

DB's or T. U's; Units of Transmission

A Discussion and Exposition of the Simplicity of the Unit Used in Telephone Transmission, the "Yardstick" of Telephone Engineering — Advantage in Use of Term DB—Can Be Applied to Any Situation Involving Gain or Loss

By Dr. J. O. Perrine,
Associate Editor, Bell System Technical Journal

Yardsticks are much in vogue nowadays. To find the proper "yardstick" for comparison of naval armaments occupies the attention of diplomatists and government leaders. Every industry and field of endeavor has its "yardstick."

The drygoods merchants and the surveyors have their yards; the electrical engineers have their volts and amperes; the lighting engineers have their lumens and foot candles; the bankers have their dollars; the food experts have their calories; the automotive engineers have their miles per hour, and the aeronautical engineers discuss engines in terms of horsepower per pound.

In every case the units involved are used to measure something. In fact, the ability to measure accurately has contributed greatly to the progress made in engineering and science. An ancient philosopher put it, "Until you can measure, you do not know."

In many cases the name of the unit tells its own story; for example, everyone knows what is meant by miles per hour, horsepower per pound, and dollars. On the other hand, volts, lumens and calories do not of themselves reveal their meaning and, therefore, are generally regarded as super-technical terms. Oftentimes, however, such a specially-named unit may be used to measure a very simple concept.

Telephone Transmission "Yardstick."

In the field of telephone engineering one finds a "yardstick" known as "the decibel." Many of the telephone family use this unit in their daily work and call it, for short, the DB.

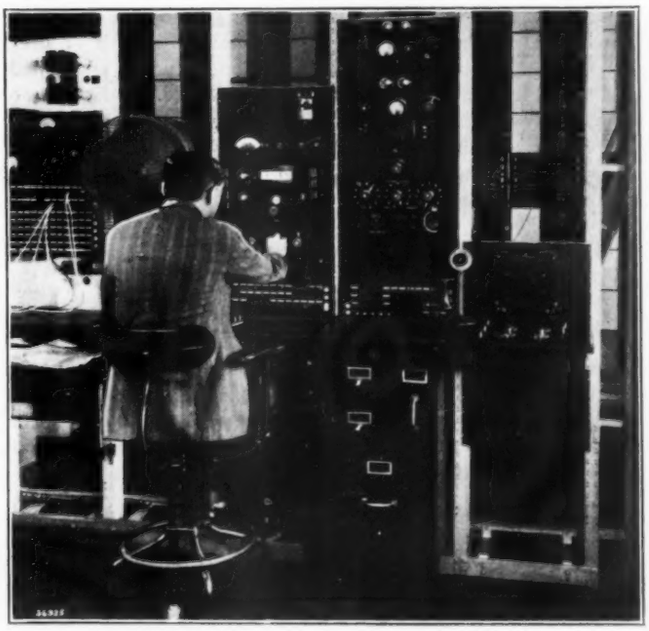
Those of the telephone family who do not use it in their daily work are inclined to think that the decibel is quite a high-sounding expression and to regard it as difficult of understanding. Nothing could be farther from the truth than the impression that the DB, or TU as it was formerly called, is a term difficult of understanding. In fact, this unit of telephone transmission is a yardstick easy of understanding.

"Efficiency" a Much-Used Term.

These days of the 20th century, with rapid development of science and mechanism, teem with conversation about efficiency and efficiency experts. We talk about the number of miles per gallon that one gets from an automobile engine and how satisfactorily a certain kind of coal heats our houses. The arrangement of kitchen facilities is studied to give the highest efficiency in the work of preparation of the family's meals.

In every case we desire to get the most out of what we put in. Here is the very essence of the efficiency idea. How much of the input is output?

When we find the ratio of the output to the input, we measure the result in the most straightforward and simple way—in per cent. There may be 100 long distance telephone calls placed in a certain central office. Ninety-five of the calls are successfully completed, and on the blackboard that day the rating is "95 per cent." The day's work has been 95 per cent efficient.



Transmission Measuring Equipment As It Appears in Long Distance Telephone Office of a Large City.

If 1 per cent of the power embodying the voice put in at a certain point in a telephone circuit is received at a distant point, the efficiency of the circuit is 1 per cent. If 95 per cent of the electric power carrying the voice is successfully transmitted through a coil or a relay in a telephone office, then that particular coil or relay is 95 per cent efficient. There is surely nothing ambiguous, abstruse or difficult of understanding in these illustrations.

How Engineers Measure Efficiency.

The efficiency of telephone apparatus and of telephone lines are problems on which much research work has been done. The unit for measuring efficiency could very well be per cent. However, due to fundamental principles in telephone transmission, it comes about that the yardstick "per cent" is not used as such, but a lump amount of per cent is used and given the name "decibel" (DB), or transmission unit (TU).

The concept percentage or ratio is, of course, retained, whatever name is given to a fixed amount of per cent. The DB is a sort of code word, shorthand language as it were, to indicate a ratio, a percentage.

The question naturally arises: "What per cent efficiency is DB?" The answer is: "1 DB efficiency is equal to 79 per cent."

Hereupon someone immediately asks: "Why is 79 per cent equivalent to 1 DB rather than 75 per cent or 50 per cent?"

To best answer this question, consider an analogous case. One could very well inquire why there are 16½ feet in a rod instead of 10 feet; the boys and girls in the sixth grade would be glad if there were 10 feet. The answer to this latter question is about as follows:

By some chance or other a certain distance was frequently used to measure length, and it finally was accepted as a unit called the "rod." Quite apart from the circumstances out of which had grown the rod, there had come into use a unit of length called the "foot." It is said that the foot was the average length of the feet of the soldiers in a certain king's army. There happened to be 16½ of these latter units in the rod of previous use. So, in a similar manner, came the relation between a DB and a per cent.

From mathematical relations and physical principles which have been used in the development of telephone transmission there appeared a ratio between input and output; the ratio gave rise to the unit, the DB. It happened that 1 DB, when ex-

pressed in per cent, came out 79 per cent—79.4 per cent, to be more exact. In the study and design of telephone circuits, the job of the engineer, with his mathematical formulas, is much simpler when efficiencies are expressed in DB's rather than in per cent.

Obviously, if a circuit is less than 100 per cent efficient, there has been a loss of power along it. If 79 per cent of the electric power put in at a certain point in a telephone circuit arrives at some other point, that particular circuit would be 79 per cent efficient, or 1 DB efficient in telephone parlance.

However, when vacuum tube repeaters are placed in a circuit, power is added. The power outgoing from the repeater is greater, rather than less, than that put in at the starting point. Without repeaters, the power received may be 79 per cent of that put in, but with repeaters the power put in may be 79 per cent of that put out.

To differentiate the two cases, one could say the circuit is —1 DB efficient when the output is 79 per cent of the input, as a result of a loss in power. When the input is 79 per cent of the output, as a result of amplification, one could say that the circuit is +1 DB efficient. Now it is to be noted that when the circuit is +1 DB efficient, the *input* being 79 per cent of the *output*, the *output* is, on the other hand, 126 per cent of the *input;*

$$126 \text{ per cent} = \frac{1}{79} \text{ per cent.}$$

In telephony, therefore, with its vacuum tube repeater playing an amplifying role, we have the interesting situation that if we stick to our fundamental idea of efficiency—how much of the input is output—1 DB efficiency may mean on the one hand 79 per cent, or on the other hand 126 per cent.

This fact need not be a confusing point in one's understanding of the DB. The 126 per cent is no mystery; it is merely 79 per cent upside down; 79 per cent must be turned upside down because the repeater gives a circuit whose efficiency is, in effect, greater than 100 per cent.

To give complete and specific information relative to such matters, the telephone engineer might say:

—1 DB efficient (79 per cent). There has been a *loss.*

+1 DB efficient (126 per cent). There has been a *gain.*

To conserve time and space, the symbols minus (—) and plus (+) and the words "efficient," "79 per cent," and "126 per cent" are omitted and the terse expressions, "1 DB loss," "1 DB gain," are used to give the same information.

If a particular piece of telephone apparatus is 63 per cent efficient, namely 79 per cent times 79 per cent, the telephone man says there has been a loss of 2 DB's. Here the 2 indicates the number of times 79 per cent is to be used as a term in multiplication. So 79 per cent times 79 per cent times 79 per cent, giving 50 per cent efficiency, would be a 3 DB loss. If there is an 8 DB gain, 126 per cent must be used 8 times in multiplication; for a 25 DB gain, 25 times.

Advantage in Use of the Term DB.

A particular reason for this way of measuring efficiency in terms of DB's rather than per cent is a reason well known to every school boy—it is easier to add simple numbers than to multiply big numbers. For example, if one particular piece of apparatus is 79 per cent efficient, and another piece of apparatus is 63 per cent efficient, and another is 50 per cent efficient, then to get the efficiency of the three pieces of apparatus connected together one must laboriously multiply 79 per cent times 63 per cent times 50 per cent to find the overall efficiency, namely 25 per cent.

However, if efficiency is expressed in DB's, the total DB efficiency is found by the simple addition of the individual DB efficiencies. The telephone man, through long usage and acquaintance with the problem, says: The first piece of apparatus gives a loss of 1 DB, the second piece of apparatus 2 DB's, and the third 3 DB's, so the loss in the three pieces of apparatus would be 6 DB's.

Of course, he really means 1 DB efficiency, 2 DB efficiency, 3 DB efficiency, making a total of 6 DB efficiency. There has been a loss of power, so instead of laboriously saying, "6 DB efficiency (25 per cent) loss," he uses the vernacular, "6 DB loss." It surely is easier to add in this case than to multiply, and as stated before, if one is used to the term and hears it frequently, the 6 DB loss means just as much as to know that the efficiency is 25 per cent.

An understanding of the situation all depends on one's familiarity with the units by which efficiency is measured. The use of DB's in day-to-day telephone practice involves no inherently difficult ideas; it is merely a question of terms, of language. That efficiencies in DB's can be added to find total efficiency in contrast to multiplication of efficiencies when expressed in per cent is due to simple mathematical relations which are used in studying telephone circuits.

An Actual Example.

Consider a telephone cable 250 miles in length. It has an efficiency of 70 DB's. To find the per cent of voice power transmitted by this cable circuit, one might use 79 per cent, 70 times, as a term in multiplication, resulting in an efficiency of one one-hundred-thousandth of a per cent (.00001 per cent). The telephone man, entirely on the basis of familiarity with the terms concerned, remarks: "I choose to say that there has been a 70 DB loss."

Of course, when such a cable is used for voice communication, such a low efficiency is offset by use of telephone repeaters located at intervals along the route which add new power to the voice currents.

The name "decibel" (DB) has been officially adopted within the Bell system instead of the name transmission unit (TU), and so will gradually replace it. The first syllable of the word decibel means one-tenth; the last syllable comes from the name of Bell, inventor of the telephone.

Applying Dee Bee's to Other Problems.

The DB is essentially the yardstick of the telephone transmission engineer. However, it can be most appropriately applied

A Portable Transmission Measuring Set for Determining DB's.

to any situation where there is a decrease or increase, a gain or loss.

The problem may be relative volume of sound from loudspeakers; efficiency of gasoline engines; amplification in radio transmitters and receivers; comparison of the financial resources of governments; defective hearing and determination of the sensitivity of the ear compared with normal ears; all can be discussed in terms of percentage or DB's, whichever is more convenient.

Assume that one has a salary of $100 a month and he has the good fortune of getting a raise of $26 a month. Most folks would say that he has had a 26 per cent increase. The telephone man who works in the transmission department and who insists on using his specialized and convenient phraseology, would say: "My salary has had a 1 DB gain."

Suppose a person has a $100 vacation fund, and at the end of the vacation returns with but $1. Most vacationists would say the vacation fund is 1 per cent of its former self. The telephone man would say: "There has been a loss of 20 DB's in my vacation fund."

The day may come when the blackboard announcing the results of a day's traffic will read:

"Calls completed, ½ DB loss."

Efficiency DB or TU Loss	Efficiency Per Cent		Efficiency DB or TU Gain	Efficiency Per Cent	
½	89.1		½	112	
1	79.4		1	126	
2	63.1		2	158	
3	50.1		3	200	
4	39.8		4	251	
5	31.6		5	316	
6	25.1		6	398	
7	20.0		7	501	
8	15.8		8	631	
9	12.6	Reduction	9	794	Amplification
10	10.0	.1	10	1,000	10
20	1.0	.01	20	10,000	100
30	0.1	.001	30	100,000	1,000
40	0.01	.0001	40	1,000,000	10,000
50	0.001	.00001	50	10,000,000	100,000

It is to be noted that 15 DB does not appear in this table. However, by simple calculation its equivalent percentage can be found in three different ways.

15 DB Loss = 10 DB + 5 DB = 10% × 31.6% = 3.16%
= 8 DB + 7 DB = 15.8% × 20% = 3.16%
= 5 DB + 5 DB + 5 DB = 31.6% × 31.6% × 31.6% = 3.16%

In an exactly similar manner the equivalent per cent of all intermediate DB losses or gains can be found.

When the loss or gain in DB's is 10 or an integral multiple thereof—for example, 10 DB, 30 DB, or 50 DB—the simplest and most convenient way to find the amount of amplification or reduction of power is as follows:

Divide the decibels by 10, giving 1, 3 or 5 bels. The 1, 3 or 5 is the number of times 10 is to be used as a factor in multiplication. 10 used once is 10; 10 used three times is 10 × 10 × 10, equalling 1,000; 10 used five times is 10 × 10 × 10 × 10 × 10, equalling 100,000.

10 DB equals amplification of 10 or reduction of .1

30 DB equals amplification of 1,000 or reduction of .001

50 DB equals amplification of 100,000 or reduction of .00001

How Efficiencies in DB's Compare to Percentages.

Extension of Telephone Service to Pacific Ocean Points Planned.

The American Telephone & Telegraph Co. is pushing plans to establish a short-wave telephone station on the Pacific Coast for radio telephone communication with Hawaii and other points in the Pacific, it was learned recently. Officials of the company would not predict, though, when transpacific telephone service would be ready for operation.

Technical and scientific details have been perfected, it is understood, and negotiations under way may bring about the establishment of connecting stations at Honolulu and other points in the Pacific Ocean.

Several steps remain to be undertaken. First, each important Pacific trade center will have to be studied to determine whether telephone service with the United States can be handled profitably. Second, the Bell system must obtain licenses to use additional short-wave channels with which to operate to points in the Pacific. Third, the telephone and government authorities at points to be served in the Pacific must take action to authorize and create short-wave receiving and transmitting stations with which communications can be established by the Bell system.

It is assumed that Australia, New Zealand, Shanghai, Hongkong, Yokohama, Tokio, Manila, Guam and Honolulu are among the important countries and cities which within a few years may be added to the world telephone network already extending over most of North America and Europe.

Service between Argentina and the United States is said to be only a few weeks off, while telephone connections between Argentina and Madrid, and Argentina and Berlin are already available. London has opened service to Australia, and a test call over 15,000 miles of ocean was made from New York, via London last fall. Holland is in regular telephone communication with the Dutch East Indies.

Most of the transoceanic telephone services of the world have been placed on a 24-hour service basis, so that differences in time are no longer a handicap.

When it is 12 o'clock noon, United States Eastern Standard Time, the clocks are as follows in other cities:

Hongkong	1:00 a. m.	Next Day
Manila	1:00 a. m.	Next Day
Yokohama	2:00 a. m.	Next Day
Melbourne	3:00 a. m.	Next Day
Honolulu	6:30 a. m.	Same Day
San Francisco	9:00 a. m.	Same Day
Salt Lake City	10:00 a. m.	Same Day
Chicago	11:00 a. m.	Same Day
London	5:00 p. m.	Same Day
Paris	5:00 p. m.	Same Day
Berlin	6:00 p. m.	Same Day
Leningrad	7:01 p. m.	Same Day

This table indicates that there are a number of hours in each day when it would be convenient to telephone between Europe, America and the Far East. With the Pacific service established, it would be possible to route telephone calls from London to Hongkong, for instance, over the lines of the Bell system in this country.

It is the established policy of the American Telephone & Telegraph Co. to own no property outside of the United States, so that in all cases the cooperation of local authorities will be necessary in the countries to which telephone service from this country is to be established.

New York Association Selects Hotel for Convention.

The Up-State Telephone Association of New York has announced that the headquarters for its convention this year will be at the Seneca Hotel. The annual meeting will be in Rochester on Wednesday, Thursday and Friday, May 21, 22 and 23.

Prices in the Metal Markets.

New York, March 17: Copper—Quiet; electrolytic, spot and future, 18c. Iron—Quiet; No. 2 f.o.b. eastern Pennsylvania, $18.50@20; Buffalo, $16.50@17; Alabama, $13@15. Tin—Easy, spot and nearby, $35.87; future, $36.12. Lead—Quiet; spot New York, 5.50c; East St. Louis, 5.35c. Zinc—Quiet; East St. Louis spot and future, 4.95c. Antimony—8.00c. Quicksilver—$123.

Here and There in Telephone Work

Telephone Plant School at Purdue University This Month.

Plans are being completed at Purdue University, Lafayette, Ind., for the eighth annual telephone plant conference, sponsored by the department of engineering extension and the school of electrical engineering, which will be held March 18 and 19, 1930. The purpose of the conference, as set forth by Professor J. W. Stafford, of the school of electrical engineering, is to bring together men in responsible telephone positions to consider ideas and exchange information relative to their common problems.

In the two-day meeting of the telephone men, problems of the city and rural service, personnel of the companies, staff organization and similar topics are taken up. Papers are to be presented by experienced men, dealing with the various phases confronted by telephone company officials. The technical aspects of the industry also receive consideration. No charge is made for the conference, the only expense to visitors being room and meals.

The Magneto Telephone Repairman—Repeating Coil.

By John A. Bracken

If two telephone lines, one of which is a grounded circuit and the other straight metallic, are connected directly together it is noticed that the disturbance due to earth currents on the grounded line, which are so troublesome and cause noise on the grounded system, is transmitted to the metallic line. The development of the repeating coil gives the means by which the difficulty of connecting a grounded telephone line to a metallic line at a magneto switchboard is greatly overcome.

Fundamentally, the repeating coil is a small transformer; that is, a stationary piece of electrical apparatus for transforming by electromagnetic induction electric power from one circuit to another, or for changing through such transformation the values of the electromotive force. It consists of two or more separate coils so placed as to have an appreciable mutual inductance and a common magnetic path as shown in Fig. 1.

The windings of a repeating coil are usually composed of the same size copper wire, and wound to the same number of turns and the same resistance per coil, depending upon the particular class of work for which each is designed. There is additional insulation between the windings, and in most cases the coils are wound so that they have a common magnetic circuit of iron which greatly increases their mutual induction.

The iron core, as it is called, is not a solid piece of iron, but is composed of thin sheets of iron in laminated form. In some types of coils the core is made of other suitable magnetic materials.

That part of the repeating coil winding which is energized from the source of input power, is called the "primary"; and the winding which delivers the output is called the "secondary." The action of the repeating coil is reversible; that is, either winding can be used as the primary or secondary.

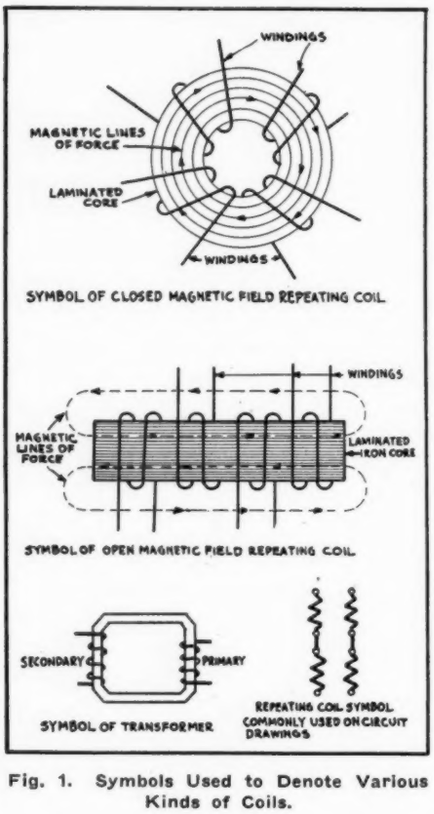


Fig. 1. Symbols Used to Denote Various Kinds of Coils.

When voice currents of variable frequency are impressed on the primary winding of a repeating coil, an alternating current of similar frequencies flows, which magnetizes the iron core circuit first in one direction and then in the other. This alternating magnetic flux itself produces a voltage in both the primary and secondary windings. This induced voltage opposes in direction the voltage impressed on the primary and is, therefore, called the "counter-electromotive" force.

The primary voltage, however, must be enough larger than this counter-electromotive force so as to drive the current through the resistance of the repeating coil primary winding. The current which flows in the primary is just large enough to excite the magnetic circuit to a degree sufficient to produce a counter-electromotive force nearly equal to that impressed. The current flowing under these conditions is, therefore, called the exciting current.

When a telephone line, etc., is connected to the secondary winding, the voltage induced in the winding causes an electric current to flow. This secondary current tends to magnetize the iron core circuit in a direction opposite to that of the primary exciting current. Since it is evident that the repeating coil must continue to be excited by the primary circuit, a current is permitted to flow in the primary winding which exactly balances the magnetizing action of the current in the secondary.

Since the magnetizing action is expressed in terms of ampere-turns, it is concluded that the ampere-turns of the current in the secondary winding must be balanced by the ampere-turns produced in the primary winding. This leads to the further determination that the ratio of the number of turns of wire in the primary winding to that in the secondary is equal to the ratio of the current in the secondary winding to that in the primary.

This assumes that the comparative size of the exciting current is so small, compared to the output current that it can be disregarded. Since the voltage per turn of wire is the same in both primary and secondary windings, the voltage ratio of transformation is equal to the ratio of the number of turns of wire in the two windings.

In practice, repeating coils are placed in the magneto switchboard cord circuit to connect the aforesaid line circuits of different electrical characteristics, for they serve to insulate the two circuits from direct metallic contact and yet permit the alternating voice currents to be transmitted through inductive action between the coil windings.

Although the repeating coil will transmit voice currents, or any electric current having a high frequency, earth currents which have a low frequency will not be repeated through the windings and, in consequence thereof, the noise on the grounded line circuit is cleared up.

This condition is produced in some switchboards by using repeating coils having an open magnetic field and a relatively small amount of iron in the core.

The windings of a repeating coil are generally divided into four parts for the purpose of inserting a condenser at the center of the primary and secondary windings, Fig. 2. The condensers are usually of one-half micro (millionth) farad each, so that when the subscriber rings off, the alternating current from the telephone magneto generator cannot operate the clear-

ing-out drop on the opposite side of the cord circuit, but must pass through the clearing-out drop located in the same side of the cord circuit because of the high reactance of the low capacitance condenser to low frequency alternating ringing current.

The reactance to an alternating current of low frequency, such as 20-cycle ringing current, will be relatively large compared to that of the high-frequency voice currents from approximately 100 to 3000 cycles per second.

For a low frequency ringing current of 20 cycles per second, the reactance of a 0.5 m. f. condenser is as represented by the formula, $X = 1 \div (2\pi fC)$, where the Greek letter π (pi) is used as a symbol (a symbol being a sign by which one knows or infers a thing) for 3.1416—that is, the ratio of the circumference of a circle to its diameter; f as a symbol for the frequency of an alternating current, and C, the capacitance in the circuit measured in farads. Then

$X = 1 \div (2\pi fC)$ or

$1 \div 2\pi \times 20 \times 0.5 \times 10^{-6}$, or

$1 \div 2 \times 3.1416 \times 20 \times 0.5 \times .000001$

$= 15{,}107$ ohms.

For a voice current of an average frequency of 1,000 cycles per second, the resistance is only 311 ohms. In other words, the 0.5 m. f. condenser offers approximately 2 per cent as much opposition to the flow of the voice current of an average frequency as to low frequency ringing currents.

The repeating coils in the magneto switchboard cord circuits are generally of the non-ring through type. Non-ring through means that the coil will readily transmit high-frequency voice currents, but will prevent the passage of low-frequency ringing currents.

If trouble is experienced with a repeating coil in service, it should be tested to show that there are no opens, short-circuits, crosses, or grounds in the windings, or that it is in an operative condition. These tests can be performed in the same manner as those given for other pieces of similar telephone switchboard apparatus.

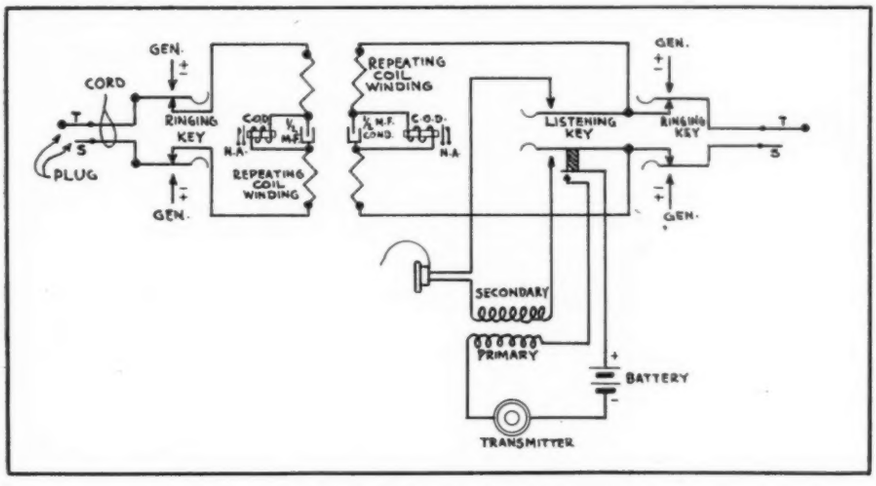


Fig. 2. Cord Circuit Containing a Repeating Coil.

Engineers Discuss Prospect of a Universal Language.

The prospect of a universal language suggested by the latest achievements of science was held forth recently by Bancroft Gherardi, vice-president of the American Telephone & Telegraph Co. and past president of the American Institute of Electric Engineers.

In the discussion of the papers on "Transoceanic Communication" at a meeting of the latter organization, Mr. Gherardi said that the extension of transoceanic telephone service and trancontinental broadcasting, along with the triumph of talking pictures, favors the adoption of a universal language. His belief was seconded by Dr. Frank B. Jewett, also a vice-president of the American Telephone & Telegraph Co. and president of the Bell Telephone Laboratories, who recalled that English was chosen as the official language at the recent world engineering conference in Tokio.

Courtesy and Kindliness at the Business Office Counter.

By Ellen Randolph,
Pomona Valley Telephone & Telegraph Union, Pomona, Calif.

In order to make the telephone service of any telephone company a river of regenerating energy, and reflected in the growth of the organization, the effort must begin at the time a subscriber signs up for his service.

The first impression, and a lasting one, is made by the commercial department, the clerks of which come into face-to-face contact with the public. This first meeting, therefore, should be a most courteous and kindly one.

If a new subscriber comes into the office for telephone service and is met with a cold reception, it is immediately reflected in his attitude toward the company. Since clerks in the commercial department represent the telephone company, it would, therefore, behoove them to use their best efforts to please, for it will be much to their advantage and reflect gratifyingly to the employer.

Courtesy is prompted by the desire to be considerate of the feelings and comforts of others—and oh, how much the public today demands courtesy! Courtesy is to the comings and goings of society what oil is to machinery. Courtesy is a virtue, and is the greatest of all assets in business. Its value is really inestimable and should be treasured like a jewel.

It is so easy to answer kindly when spoken to; and if employes would cultivate the habit of kindliness, both in speech and deed, how much more congenial this work-world would be.

Did you ever stop to think how little it costs to give a smile? And so very often it is worth much more than its face value, too! On the other hand, when service, or other matters which may arise in connection with telephone service, displeases a subscriber and he comes into the office with a complaint to make, be ready to go to all lengths. Try to assist him in composing his difficulties. Look at his side of it as well as from the company's standpoint, and try to satisfy him, within reason, courteously.

Don't you think we judge one another harshly, knowing not life's hidden force, nor thinking that the fount of action is perhaps less turbid at its source? Perhaps we would be more friendly and courteous if we only understood that amid all the evil there are some golden grains of good.

When a dissatisfied customer approaches you with "daggers in his eyes," keep as sweet-tempered as possible; hold yourself in check. If you allow yourself to get nervously wrought up over little annoyances, or irritated at the action or remarks of others, you will be certain to do and say that which will be out of place and cause you many regrets. Words shot from the bowstring of a tense spirit, fly swiftly and may pierce deeply when you are talking with an angry person; so use self-control and remember: "A soft answer turneth away wrath."

If you know that you have greeted everyone you met at the counter each day in the most courteous manner possible, you will have an honest pride in the fact.

If the application of courtesy and kindliness is distributed throughout the day in your entire work, you will benefit materially, and your company too!

Indiana Association Convention to Be Two-Day Meeting.

The Indiana Telephone Association convention, to be at the Claypool Hotel, Indianapolis, will be held May 6 and 7 instead of May 6, 7 and 8 as previously scheduled, Secretary-Treasurer W. H. Beck has announced.

The Financial Side of Companies

Miscellaneous Items of Interest Regarding Financial Matters of Telephone Companies—New Securities Issued During Past Month—Figures From the Monthly Reports of Larger Companies to Interstate Commerce Commission

December Earnings of Class A Companies Show Increase.

Compilations from reports of revenues and expenses of 97 telephone companies, as made to the Interstate Commerce Commission for the month of December, 1929, show gross operating revenues of $98,713,938, as compared with $92,444,272 for the corresponding month of 1928, showing an increase of 6.8 per cent for 1929. The operating income for the same month was $23,937,908, an increase of 31.3 per cent over that of 1928, when it was $18,228,766.

Operating revenues for the 12 months ended with December, 1929, were $1,143,536,535, as compared with $1,042,395,615 for the corresponding period in 1928, showing an increase of 9.7 per cent for 1929. Operating expenses for the same period were $771,858,193 and $696,897,558, respectively, an increase of 10.8 per cent for 1929. The operating income for the year of 1929 amounted to $276,138,993, an increase of 9 per cent over that of 1928, when it was $253,437,283.

The companies, which include only those having annual operating revenues in excess of $250,000, had 16,801,102 stations in service at the end of December, 1929, an increase of 5.8 per cent over that of 1928, when there were 15,873,365. Complete data for the following companies in this class were not available for inclusion: Central West Public Service Co., Nebraska Continental Telephone Co., and the Southeast Missouri Telephone Co.

Gold Notes Issued by Western Utilities Corp.

The Western Utilities Corp. recently placed on the market a new issue of 6 per cent gold notes to the amount of $2,000,000, to mature September 1, 1931, and priced at 99¼ and accrued interest, to yield 6.53 per cent.

The Western Utilities Corp. furnishes, through its operating properties, water and telephone service in California to cities or towns within the immediate vicinity of Los Angeles and San Diego, having a combined estimated population in excess of 140,000. The company has developed its business in this territory at the rate of over 95 per cent in water customers and of more than 89 per cent in telephone customers during the past eight years.

The operating properties have been appraised by Independent engineers at a net depreciated value of $8,704,920.63, which is substantially in excess of $4,180,000 principal amount of total funded debt presently to be outstanding, including this issue.

For the 12 months ended December 31, 1928, gross earnings were $823,903.96 and net earnings, before charging interest, depreciation and federal taxes, amounted to $461,925.20. After giving effect to the present financing for the 12 months ended December 31, 1929, gross earnings (including non-operating income of $39,467.54) were $977,767.38 and net earnings, before charging interest, depreciation and federal taxes, amounted to $618,407.54.

The net earnings for 1929, as reported above, equal over 2½ times the annual interest requirements on total outstanding funded debt including this issue of notes, it is stated; and, after deducting all prior interest requirements on bonds outstanding, equal over 4.1 times the annual interest requirements on this issue of 6 per cent gold notes.

Central Illinois Co., H. M. Byllesby & Co., Freeman, Smith & Camp Co. and Paul H. Davis & Co. are marketing the issue.

Dividend Not Earned But No Financial Loss Recorded.

The Northeast Nebraska Telephone Co., with headquarters at Walthill, Neb., and serving also exchanges at Rosalie and Winnebago, reports gross revenues during the year 1929 of $14,975.48. The company is largely owned by E. C. Hunt, who is president and manager, with V. H. Hunt as secretary. The company serves 465 stations, an increase of 11 during the year, with 251 town and 214 rural subscribers.

Items.	Month of December				Twelve months ended with December			
	1929.	1928.	Increase or decrease (*). Amount.	Ratio, Pct.	1929.	1928.	Increase or decrease (*). Amount.	Ratio, Pct.
Number of company stations in service at end of month	16,801,102	15,873,365	927,737	5.8	.....	.....	.....	....
Revenues:								
Subscribers' station revenues	$58,588,239	$55,377,411	$3,210,828	5.8	$ 682,472,784	$ 636,670,062	$ 45,802,722	7.2
Public pay station revenues	4,190,538	4,043,028	147,510	3.6	46,882,509	44,214,594	2,667,915	6.0
Miscellaneous exchange service revenues	864,182	736,936	127,246	17.3	9,638,296	8,242,551	1,395,745	16.9
Message tolls	28,144,644	26,581,751	1,562,893	5.9	330,434,334	291,456,205	38,978,129	13.4
Miscellaneous toll line revenues	4,198,026	3,347,185	850,841	25.4	43,981,746	35,944,189	8,037,557	22.4
Sundry miscellaneous revenues	2,690,033	2,302,964	387,069	16.8	29,684,970	25,327,530	4,357,440	17.2
Licensee revenue—Cr.	1,299,822	1,593,910	*294,088	*18.5	14,755,384	17,902,110	*3,146,726	*17.6
Licensee revenue—Dr.	1,261,546	1,538,913	*277,367	*18.0	14,313,478	17,361,626	*3,048,148	*17.6
Telephone operating revenues	$98,713,938	$92,444,272	$6,269,666	6.8	$1,143,536,545	$1,042,395,615	$101,140,930	9.7
Expenses:								
Depreciation of plant and equipment	$15,184,349	$15,578,562	*$ 394,213	*2.5	$ 174,419,785	$ 163,467,722	$ 10,952,063	6.7
All other maintenance	17,390,795	15,792,025	1,598,770	10.1	189,187,926	163,305,788	25,882,138	15.8
Traffic expenses	20,916,049	19,274,128	1,641,921	8.5	238,594,600	222,080,643	16,513,957	7.4
Commercial expenses	9,426,542	8,565,169	861,373	10.1	107,099,741	93,387,213	13,712,528	14.7
General and miscellaneous expenses	5,857,478	6,577,154	*719,676	*10.9	62,556,141	54,656,192	7,899,949	14.5
Telephone operating expenses	$68,775,213	$65,787,038	$2,988,175	4.5	$ 771,858,193	$ 696,897,558	$ 74,960,635	10.8
Net telephone operating revenues	$29,938,725	$26,657,234	$3,281,491	12.3	$ 371,678,352	$ 345,498,057	$ 26,180,295	7.6
Other operating revenues	$ *3,823	$ 9,230	$ *13,053	....	$ 33,660	$ 86,728	$ *53,068	....
Other operating expenses	3,695	1,445	2,250	....	42,983	41,449	1,534	....
Uncollectible operating revenues	829,596	546,239	283,357	51.9	7,581,687	6,499,757	1,081,930	16.6
Operating income before deducting taxes	$29,101,611	$26,118,780	$2,982,831	11.4	$ 364,087,342	$ 339,043,579	$ 25,043,763	7.4
Taxes assignable to operations	5,163,703	7,890,014	*2,726,311	*34.6	87,948,349	85,606,296	2,342,053	2.7
Operating income	$23,937,908	$18,228,766	$5,709,142	31.3	$ 276,138,993	$ 253,437,283	$ 22,701,710	9.0
Ratio of expenses to revenues, per cent	69.67	71.16	*1.49	....	67.50	66.86	.64	...

Operating Statistics of 97 Class A Companies for December, Compiled from Reports to Interstate Commerce Commission.

The company has a fixed investment or $50,728 and total assets of $55,464. The financial statement shows $19,756 of common stock outstanding, a funded debt of $1,500, notes payable of $15,526 and accounts payable of $3,214, a depreciation reserve of $22,070, with surplus overdrawn $7,459.

Exchange revenues for the year were $10,900, toll revenues $3,899, and miscellaneous revenues $176, a total of $14,975. Total expenditures for the year were $12,565, maintenance being $3,858 and depreciation $5,517, a total spent on the physical plant of $9,375. Traffic expenses were $3,577 and commercial $3,471. Of the operating income of $2,410.45, taxes took $540 and interest $1,588.06. The difference, $282.39, no dividends being paid, went to profit and loss.

Pacific Bell Reports Large Gain in Number of Telephones.

The annual report of the Pacific Telephone & Telegraph Co. system, which includes the Pacific Telephone & Telegraph Co., the Southern California Telephone Co., the Home Telephone & Telegraph Co. of Spokane and the Bell Telephone Co. of Nevada, stated that during 1929, 84,569 telephones were added and 9,862 were obtained through purchase of the Northern California Telephone Co. and the Willamette Telephone Co., making a total net gain of 94,431. The number of telephones owned and operated by the Pacific system at the end of the year was 1,562,615.

In the net addition of these 84,569 telephones during the year a gross turnover of 1,073,347 telephones, or the connection of 578,958 and the disconnection of 494,389 was necessary. Thus it was necessary to connect seven telephones for each one represented in the net gain.

The average number of calls made daily during 1929 was 8,303,813, an increase of more than 595,600 calls per day over 1928. More than 299,500 of the total calls per day during 1929 were inter-city calls (toll and long distance) an increase of 12.5 per cent over 1928.

The company is planning extensive toll and cable projects for 1930. "With the completion of these main cable routes and other shorter cables required to round out the system, over 93 per cent of the company-owned telephones will be directly served from these cables," the report states.

An attractive feature adding human interest to the report is a four-page insert in the center showing, on the first page, the telephone buildings at different size exchanges. A double page center spread gives "scenes of telephone construction on the Pacific coast, where natural barriers create interesting problems." Interesting views of pole line construction on toll leads in desert country, aerial construction, digging trench for underground cable, laying submarine cable in San Francisco Bay and splicing a telephone cable, are also shown here.

On the last page of the insert different company activities are illustrated, including directory delivery, operators' conference, rotary information files, etc.

"In 1929," the report states, "further definite improvement was made in the quality, speed and dependability of the service. The 'Appointment Plan of Installations' under which service is established at a particular time designated by the customer, was further developed and extended; plant troubles were reduced; information and directory service was broadened in scope and effectiveness; time of day service was provided in all exchanges; joint conferences between private branch exchange attendants and representatives of the company resulted in better understanding of mutual problems, which in turn contributed to betterment of the service."

"Our sales program, designed to fully apprise our customers and the public of the character and types of service we have for sale and the advantages that may be obtained from the enjoyment of adequate telephone facilities, was successfully carried on during the year 1929. Our educational and selling program was continued with the aid of our 34,000 employes, any one of whom will take an order for service at any time. The substantial increase in our business during the past year was due in a large measure to these organized efforts of our entire personnel.

Our efforts were directed not only to sale of service but also to aiding the telephone customer to make the best possible use of his service. As we influence one person after another to use the telephone more effectively, the service rendered every other user is correspondingly improved.

"With the assistance of our entire personnel, investigation has been under way to determine what practice or methods are not well received by the public, with the object of eliminating such practices wherever practicable. Our investigation also includes a study of what services the public like best. So that, insofar as possible, these services and practices may be extended."

At the end of the year, the Pacific system had 33,893 employes engaged in rendering telephone service to Pacific coast communities—14,699 men and 19,194 women. This is an increase of 2,645 over December 31, 1928. Of these 26,220 were purchasing, by deductions from pay, 1,138,329 shares of stock of the American Telephone & Telegraph Co.

The Pacific company system's consolidated income statement (duplications excluded) for the year ended December 31, 1929, is as follows:

Telephone operating revenues		$101,502,885.71
Telephone operating expenses		68,781,269.41
Net telephone operating revenue		$ 32,721,616.30
Deductions—Uncollectible operating revenues	$ 947,175.00	
Taxes assignable to operations	8,567,969.75	9,515,144.75
Operating income		$ 23,206,471.55
Net non-operating income.		1,212,081.27
Gross income		$ 24,418,552.82
Deductions—		
Bond interest	$3,400,494.03	
Other interest	4,352,885.84	
Debt discount and expense	181,486.33	
Rent and miscellaneous..	860,070.83	8,794,937.03
Balance net income		$ 15,623.615.79
Dividends—Preferred stock..	$4,920,000.00	
Common stock	6,510,000.00	11,430,000.00
Balance for Corporate surplus		$ 4,193,615.79

Statistics of Pacific Bell Telephone & Telegraph Co.'s System.

	1928	1929
Number of company telephones	1,468,184	1,562,615
Number of connecting miscellaneous telephones	354,691	367,972
Total number of telephones	1,822,875	1,930,587
Estimated number of originating calls during year	2,549,000,000	2,743,000,000
Number of central offices	742	788
Number of exchanges	657	681
Miles of pole lines	27,385	29,887
Miles of aerial wire	1,909,555	2,241,272
Miles of underground and submarine wire	3,951,350	4,497,553
Miles of subway (length of street occupied)	2,015	2,518
Miles of duct in subways	9,293	11,954
Number of buildings owned	193	213
Number of male employes	12,393	14,699
Number of female employes	18,855	19,194
Total number of employes	31,248	33,893
Total payroll for year	$44,813,346	$52,232,478

Small Gain Reported; Dividends Paid, Surplus Increased.

The annual report of the Cuming County Independent Telephone Co., filed with the Nebraska State Railway Commission, indicates a prosperous year. O. R. Thompson is president and J. W. Richmond secretary and manager, and two towns, Wisner and Beemer, are served acceptably. The company closed the year with a total

of 1,162 stations in service, a gain of 16. Of the number, 519 are town stations and 643 rural. The headquarters are located at Wisner.

The company has a fixed investment of $115,992 and total assets of $119,434. There is outstanding common stock totaling $61,797. The company has a depreciation reserve of $36,882 and an appropriated surplus of $18,793.

Exchange revenues during 1929 totaled $26,521.45, toll revenues $1,938.37 and miscellaneous revenues of $346.56, making a total of $28,546.38. The company expended a total of $21,187.91, divided as follows: Maintenance, $6,973.95; depreciation, $3,306.69 (total for both items of $10,280.64); traffic, $4,751.08 and commercial, $6,156.19.

This gave the company an operating income of $7,358.47. From this were deducted taxes of $1,150; interest, $22.40 and dividends of $4,509.82, leaving $1,676.25 to be passed to surplus.

The Bell Telephone Co. of Canada Increases Capitalization.

Shareholders of the Bell Telephone Co., of Canada recently formally approved a proposal to increase the capitalization of the company to 1,500,000 shares of a par value of $100 each. They also authorized the board of directors to issue additional bonds to the amount of $50,000,000.

The present capitalization is 750,000 shares of $100 par value each. The resignation of L. B. McFarlane, chairman of the board, was announced. J. E. MacPherson, a vice-president, was elected a member of the board.

Large Expenditures for Construction Planned in West Virginia.

In its report to the stockholders of the Chesapeake & Potomac Telephone Co. of West Virginia the board of directors stated that during the next five years the company plans gross expenditures for improvements to the telephone system in West Virginia of approximately $18,590,000, with net additions of $9,500,000.

The 1930 construction program calls for gross additions to outside plant of $4,500,000, with net additions of $3,150,000. By the end of 1934, it is estimated that there will be about 139,300 telephones in service. The company expects to add 5,000 telephones to the West Virginia system this year, the report shows.

On December 31 there were 112,854 telephones operated from 93 central offices in the state. This was an increase of 5,035 telephones and five central offices during 1929.

To secure this net gain, the company installed 21,569 telephones and disconnected 16,534, showing that it was necessary to install more than four telephones to make a net gain of one. As a result of purchases and transfers, 806 additional telephones were added to the system, making the net increase for the year 5,841.

The Chesapeake & Potomac connecting companies operate 143 central offices serving 26,357 telephones and also connect with 213 rural line associations operating 3,037 telephones, which makes 142,248 telephones operated by or connected with the lines of the company in West Virginia.

Stock Issue Offered by Mid-West States Utilities Co.

An issue of 48,000 shares of class A common stock without par value was recently placed on the market by the Mid-West States Utilities Co. The Mid-West company serves 55 communities with telephone service, and an estimated population of 195,000. Properties in Illinois are contiguous to Rockford; in Wisconsin north and northwest of Milwaukee; in Texas south of Dallas and in western Arkansas. electric power service is furnished to approximately 147 communities in Oklahoma, having an estimated population of about 500,000.

Gross earnings of the company for the 12 months ended December 31, 1929, were $930,119.20; operating expenses, maintenance and taxes exclusive of federal income taxes but excluding reserves, $575,628.40, leaving a balance of $354,490.80; prior charges were $150,520, leaving a balance of $203,970.80, which is equal to $4.24 per share of class A common stock.

The class A common stock is fully paid and non-assessable and is entitled to noncumulative cash dividends at the rate of $1.75 per annum, payable when and as declared on the first days of February, May, August and November, in priority to the class B common stock. In each year after all class A dividends are paid or set apart, and dividends have been paid or set apart on the class B common stock at the rate of $1.75 per share, then the class A common stock shall share equally with the class B common stock on a share for share basis, in all further cash dividends. The class A common stock is redeemable as a whole or in part at any time on 60 days' notice at $55 per share.

The board of directors passed appropriate resolutions which permit class A common stockholders, at their option, to apply quarterly cash dividends of $1.75 per share per annum, when and as declared and paid, toward the purchase of additional class A common stock at $17.50 per share.

The issue is being offered by a syndicate composed of E. H. Ottman & Co., Chicago; Warren A. Tyson & Co., Philadelphia; De Fremery & Co., San Francisco and Los Angeles; John A. Kutz & Co., Seattle, Wash., and John P. Glendon & Co. of Detroit and Grand Rapids, Mich.

General Service Improvements Reported by New Jersey Bell.

An increase of 47,636 telephones during the last year in the number served by the statewide system of the New Jersey Bell Telephone Co. was recently announced by Chester I. Barnard, president of the company, in the annual report of the company to its stockholders.

The increase reflects the largest expansion in the history of the industry in the state and brought the total telephones served by the company to 669,432 at the beginning of this year, approximately 99 per cent of all New Jersey telephones.

Gross telephone revenues for 1929 increased 10.4 per cent over 1928 and telephone operating expenses increased 10.3 per cent. After payment of dividends a balance of $1,306,469 remained, which was invested in additions to property.

During the year the company's investment in plant and equipment increased from $154,648,394 to $170,615,154. At the end of the year, the investment in land and buildings used for telephone purposes was $22,431,997, and in other plant and equipment $148,183,157.

The company at the beginning of this year owned 72 buildings and leased 162 others. Besides the company's headquarters building in Newark nine other owned buildings were completed during the year.

The gross expenditures for all plant expansion during the year amounted to $23,141,191, of which $3,525,488 was for new land and buildings; $4,979,758 for central office equipment; $4,709,236 for telephone equipment on subscribers' premises; $7,325,138 for line equipment within local central office areas, and $2,327,269 for toll lines.

The expansion of plant reflected greatly increasing use of telephone service in the state noted by the directors in a 10.6 per cent increase in the average daily number of local calls in 1929 over 1928, and a 22 per cent increase in long distance calls. On an average day of last year, 2,185,000 local telephone calls were made, comparable with 1,976,000 for the average day of 1928, and the total average daily calls including all sorts was 2,640,000 last year contrasted with 2,410,000 in 1928.

Twelve new central offices were placed in service during the year and 48 major additions to central offices were also made, to handle the increasing telephone traffic load. Supplementing the central office facilities, 329,000 additional miles of telephone wire were placed in use, all but 4 per cent of it in protected cable. The wire in use at the end of the year in the company's system totaled 3,404,546 miles.

Service improvements reported include lessening by almost a day the interval between receipt of orders for telephone service and the installation of equipment; lowering the speed of long distance connections to an average of 2.2 minutes; increasing the percentage of such calls that can be made while the calling parties hold the line; quicker clearing of trouble, and better information service.

Use of dial system equipment is increasing, the report discloses, and by 1935 more

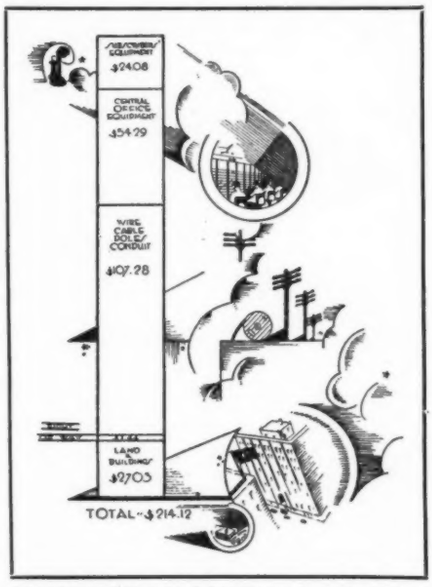
than half the company's telephones are expected to be served by dial equipment.

The report states that 16,230 employes are in the company organization. Benefits amounting to $385,992 were paid during the year in 3,068 cases for pensions, accident, sickness and death benefits and expenses.

Southwestern Bell's Report Shows Good Increase in Earnings.

More telephones in homes and business places, more calls completed on the first attempt, improved long distance service, and a reduction in long distance rates are among the accomplishments of the Southwestern Bell Telephone Co. as shown by the annual report for 1929, which was made public recently.

The report is a record of improvements in local and long distance service, and



Effective Method of Showing Investment of Southwestern Bell Company in Property Per Telephone on December 31, 1929.

shows that more than 54,000 new telephones were added to the company's exchanges during the year. Net earnings amounted to $21,900,000, as compared to $19,500,000 in 1928. Long distance calls numbered 71,145,000, and more than $42,000,000 was spent in adding to plant equipment. Fifteen new buildings were erected; extensions were made to eight others; 586,000 miles of wire were added to the system.

In Missouri, Arkansas, Kansas, Oklahoma, Texas and a part of Illinois adjacent to St. Louis, the territory served by the Southwestern company, 2,215,000 telephones, including those of connecting companies, are served by 5,863,000 miles of wire. The Southwestern company operates 1,353,000 telephones in this area.

"In order to provide service which shall at all times be adequate, dependable and satisfactory to these users," says President E. D. Nims, "this company must have a wide range of accurate information on the factors affecting the business and social life of the territory it serves. Four years ago work was started on economic studies of each of the five states. Four of these studies have been completed; the fifth will be ready in 1930.

"These surveys show the natural resources of each state, its industrial development, transportation facilities, business outlook, trends of population—all necessary factors in forecasting the telephone market. This fact finding is a necessity if this company meets its responsibility of giving adequate telephone service to its customers.

It takes time to engineer and install cables, wire, equipment. Engineers, mathematicians, economic specialists are determining now as accurately as possible how many customers and calls will have to be cared for in a given community five years, ten years hence. To provide adequate telephone service to meet the growth thus forecast will require an expenditure during the next five years which has been estimated at 250 million dollars.

It is the aim of this company to provide its customers with a service more and more free from imperfections, errors or delays. To this end, substantial progress was made during the year in furnishing them faster and better local service. Additional telephone lines were provided to users who needed them; circuits and equipment were rearranged; effort was made to instruct our customers in proper telephone usage, both in placing and answering calls.

As a result of these activities approximately 42 million more local calls were completed on the first attempt during 1929 than would have been completed under conditions prevailing the preceding year.

Telephone directories play an important part in the furnishing of telephone service, and every effort has been made to be sure they are complete and convenient for reference.

The plan of aiding private branch switchboard users was continued. Through personal visits to firm managers and operators, and through the training and placement of more than 1,800 operators, much was done to improve this service.

The first cable carrying 1,818 pairs of wires was installed in St. Louis early in

Unique Illustration Showing Territory Served by Southwestern Bell Telephone Co. and Its Leading Products.

1929. Previously the largest cable had contained only 1,212 pairs. This new cable is no larger in diameter than the 1,212-pair cable, yet will serve half again as many telephones.

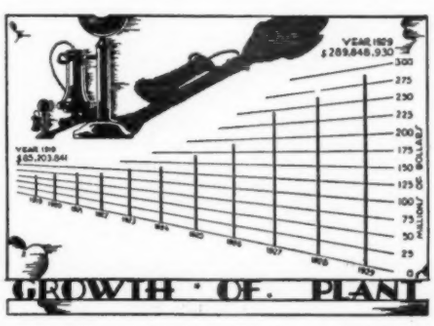
A project started in 1928 to provide the farmer with dependable service was continued during 1929. A type of rural telephone construction has been developed which will give the farmer reliable service at rates within his reach.

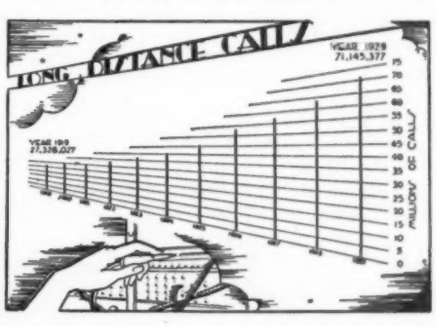
This new service limits the number of subscribers on a line, thereby reducing the busy condition. At the end of 1929 the new rural service was in operation in a substantial number of communities in each of the five states, and there is every reason to hope that this service will be greatly extended during 1930.

A plan for definitely advising a customer at the time the order is taken when his telephone will be installed or moved was put into effect during the year and has proved a real convenience to our customers. Appointments are made to conform as closely as possible to the wishes of the customer.

The policy of making regular inspection of lines, instruments, equipment, to remove possible causes of trouble has been expanded, resulting in a material decrease in the number of trouble reports. Efforts to improve the quality of business office service, which must necessarily be rendered in each community, were continued.

Transmission tests to improve service rendered jointly by this company and con-

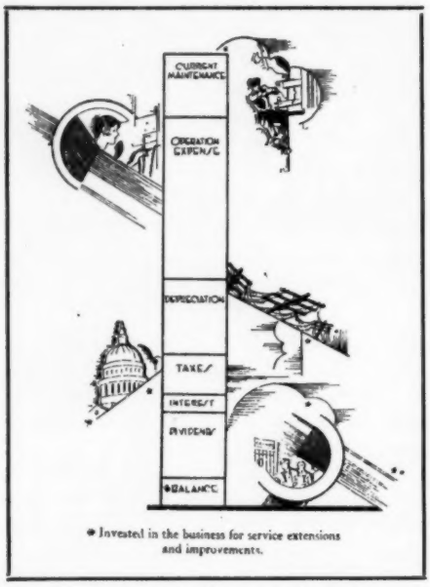




Illustrations Carrying Human Interest Appeal Were Used in Annual Report of Southwestern Bell Telephone Co.

necting companies have been continued throughout the year. Likewise, assistance has been given these companies to improve and promote their long distance business.

This company took further steps during the year to widen the scope of its selling activities. A new sales organization was



Graphical Presentation of Disposition of Revenues of Southwestern Bell Telephone Co. for Year Ending December 31, 1929.

formed to plan, conduct and supervise all sales activities. Special sales forces were increased. All telephone people were enlisted to explain, advise, assist customers in obtaining telephone service best suited to their needs.

This active sales policy is yielding good results. It is reflected in the number of telephones added to the system during the year. Many customers now enjoy more convenient, more efficient telephone service in home or office. Service as a whole has improved, as adequate facilities aid materially in increasing the number of calls completed on the first attempt."

More than 325 miles of underground long distance cable have already been placed in the project to connect the principal cities of the Southwest by underground lines. Cables have already been placed between Oklahoma City and Holdenville, Okla.; between Dallas, Ft. Worth and Cisco, Texas. Work is practically completed between Oklahoma City and Tulsa; well under way between St. Louis and Kansas City, between Joplin and Carthage, Mo. Within the next five years it is planned to spend $35,000,000 for long distance cables and associated equipment.

More than 58,000 telephones were changed to dial operation during the year, which brings the number served by automatic machinery to 36 per cent of the total served by the company. Eight new dial offices were opened during the year. It is estimated that by January 1, 1935, 68 per cent of the company's telephones will be served by dial offices.

The descriptive income statement of the Southwestern Bell Telephone Co. for the year ended December 31, 1929, follows:

Telephone operating revenues Revenues from local and toll service, advertising in telephone directories and miscellaneous telephone operations.		$85,315,960.46
Telephone operating expenses Expenses such as operators' wages and other expenses of handling messages, current maintenance of plant, depreciation, billing and collecting subscribers' accounts, directories, sickness, accident and death benefits, pensions and general administrative and miscellaneous expenses.		54,862,549.26
Net telephone operating revenue		$30,453,411.20
Uncollectible operating revenues The estimated amount of revenues which, based on experience, cannot be collected.		695,341.93
Taxes assignable to operations Federal, state and local taxes applicable to the year 1929.		7,559,829.87
Operating income		$22,198,239.40
Net non-operating income Principally dividends and interest from investments in stocks, bonds and notes of affiliated and other connecting telephone companies.		841,533.25
Gross income		$23,039,772.65
Bond interest Interest charges on bonds outstanding.		2,596,106.41
Other interest Interest on other debt obligations.		733,913.44
Amortization of debt discount and expense The proportion of debt discount and expense applicable to the year 1929 in connection with outstanding bond issues.		168,933.48
Rent and miscellaneous deductions Principally rentals paid for real estate and for plant facilities rented from other companies.		1,101,405.87
Balance net income		$18,439,413.45
Dividend appropriations of income Dividends declared from net income for the year 1929 to owners of outstanding preferred and common stock.		12,724,985.00
Other appropriations of income Amounts set aside to cover possible refunds in connection with rate increases.		417,927.00
Balance for corporate surplus Undivided profits transferred to corporate surplus.		$ 5,296,501.45

Southwestern Bell Telephone Co. Statistics as of December 31.

	1928	1929
Central offices	783	765
Private branch exchanges	7,033	7,598
Telephones operated by:		
Common battery	782,526	781,116
Magneto	88,486	86,122
Dial system	428,389	486,466
Residence telephones	822,560	851,647
Business telephones	476,841	502,057
Total company telephones	1,299,401	1,353,704
Service and private line telephones	76,234	73,551
Connecting company telephones	768,794	788,602
Total telephones	2,144,429	2,215,857
Number of telephone typewriter stations	332	553
Conecting telephone companies	2,041	1,854
Central offices, connecting companies	3,095	3,132
Miles of pole lines	48,411	50,595
Miles of wire—aerial	2,454,129	2,624,738
Miles of wire—underground	2,823,385	3,238,782
Miles of wire (exchange and toll)	5,277,514	5,863,520
Miles of toll wire	421,843	599,636
Miles of toll wire—connecting	102,934	95,107
Average exchange messages daily	9,327,182	9,771,093
Outward toll messages for year	63,797,146	71,145,377
Number of employes:		
Men	9,640	11,740
Women	18,760	19,476
Total	28,400	31,216

Earnings of Southern New England Telephone Co.

The annual report of the Southern New England Telephone Co. for 1929, given by its president, James T. Moran, at the annual meeting of the company, showed operating revenues of $16,666,184 and operating expenses of $11,450,012, leaving net operating revenues of $5,216,172.

After dividend appropriations there was a balance of $775,170 for corporate surplus. The balance sheet showed assets totaling $67,988,021.

No Dividends Paid; Net Earnings Passed to Surplus.

The Citizens' Telephone Co., of Malmo, one of the several companies which E. C. Hunt operates in Nebraska, has filed its annual report with the state railway commission. The company serves 1,214 stations from its exchanges at Malmo, Prague, Morse Bluff, Weston and Elgin, 415 being in towns and 799 in the country. E. C. Hunt is president and manager and V. H. Hunt secretary. Headquarters are at Blair, Mr. Hunt's largest exchange.

The company reports a fixed investment of $108,784 and total assets of $121,481.

(*Continued on page* 32.)

IS THE BEST TELEPHONE FOR YOUR SUBSCRIBERS?

TELEPHONE subscribers nowadays want a telephone which incorporates in its design, first, the modern beauty of curved flowing lines and graceful shape; second, the convenience of a hand-set, which also has perfect balance, built-in; and third, crisp and clear-cut transmission, without disturbing side tone.

But, your engineers say, can an instrument be found which has these qualities desired by the subscriber, and which *also* retains the characteristics of older style telephones so important to the telephone company:--namely, inherent strength and ruggedness, reliability and long life?

In one instrument, the Monophone, and one instrument only, will you find all these qualities skillfully combined. This instrument is not a conception of the moment, a hurried assemblage of parts. The Strowger staff of expert designers spent many long years of careful and exacting development before introducing the Monophone to the telephone trade. Its unparalleled success is but a fitting climax to the experience and effort which produced it.

Automatic Electric Inc.

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American Electric Company, Inc.	Chicago
International Automatic Telephone Co., Ltd.	London
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The New Antwerp Telephone and Electrical Works	Antwerp

AUTOMATIC SYSTEMS

When writing to Automatic Electric Inc., please mention TELEPHONY.

(*Continued from page* 28.)

It has common stock outstanding of $12,759 and a funded debt of $57,000. The depreciation reserve totals $47,996 and the surplus $994.

Exchange revenues were $5,936.11 and toll revenues $847.35, a total of $6,783.49. Total expenses for the year were $4,799, divided as follows: Depreciation, $208 and maintenance $2,449, a total of $2,657; traffic, $1,178 and commercial $964.94. The operating income was $1,983.60, taxes of $135 and interest of $855 were paid, leaving $993.60 to be passed to surplus, no dividends being declared.

Michigan Bell Company Fails to Meet Dividend Requirements.

The net income of the Michigan Bell Telephone Co. during 1929 was $6,012,709.79, which was short of dividend requirements by $787,290.21, according to the annual report submitted by President Burch Foraker at the annual meeting of the board of directors early this month.

This is the second consecutive year that the company's earnings have failed to meet dividend requirements. The dividend shortage in 1928 was $411,293.29, and the deficit under dividend requirements for the two years totaled $1,198,584.10.

Telephone operating revenues were $41,802,593.20, while the operating expenses were $28,930,848.60, leaving a net operating revenue of $12,871,744.60. Deductions of $3,840,598.39 for taxes and $222,083.37 in uncollectible revenues, leaves an operating income of $8,809,062.84.

Non-operating income of $252,224.32, including interest on investments and bank balances, rent revenues and miscellaneous items, brought gross income to $9,061,287.16. Rent and interest paid, including miscellaneous deductions, totaled $3,048,577.37, resulting in the balance net income of $6,012,709.79.

The dividend shortage of $787,290.21 was made up from the surplus earnings of prior periods, as was ntcessary in 1928.

Gross additions to telephone plant during 1929 were $28,462,560, the largest amount spent for facilities expansion in any one year in the history of the Michigan Bell company.

During the year, 208,270 telephones were installed, and 159,758 were disconnected, resulting in a net gain for the year, exclusive of purchases, sales and transfers, of 48,512 telephones, or 4,414 greater than the net gain in 1928.

I. T. & T. Corp. Offers Stock Rights; Earnings Show Gain.

The directors of the International Telephone & Telegraph Corp. on March 13 authorized the offering of about $36,619,850 additional common stock to holders of common shares of record March 21 on the basis of one new share at $50 each for 8 shares held.

At closing price on March 13 of 68⅝ for International Telephone & Telegraph common shares, the rights are worth $2.07 each, and in the aggregate show a value of $12,128,494 on 5,859,176 common shares now outstanding. The company sold $50,000,000 of 25 year 5 per cent gold debenture bonds, due 1955, a few weeks ago, making its financial program thus far announced over $86,600,000 this year.

The proceeds of the stock offering, it was announced, will be used in the development of the communications system, the telephone operating services, and the manufacturing branch of the company.

The corporation reports a consolidated net income of $17,732,159 for 1929, equivalent to $3.03 a share earned on 5,856,984 no par common shares outstanding on December 31, 1929. This compares with $14,596,337, or $10.26 a share earned on 1,422,785 capital shares of $100 par value earned in 1928, equivalent to $3.42 a share on 4,268,355 no par common shares. There was an increase of 1,590,629 shares of no par value during 1929.

Gold Bonds of Central West Public Service Co. Issued.

The Central West Public Service Co., recently placed on the market first lien collateral 5½ per cent gold bonds, series B, to the amount of $1,050,000, dated May 1, 1928 and due November 1, 1956. The bonds are priced at 90 and interest, yielding over 6.25 per cent.

This company and its subsidiaries supply one or more classes of utility service in 249 communities located in Illinois, Iowa, Minnesota, Nebraska, North Dakota, South Dakota and Texas. For the year ended December 31, 1929, the combined gross revenue from the properties owned by the company and its subsidiaries was $2,448,140.74. The net income before deducting interest, depreciation and federal income tax was $783,033.97. Annual interest on the first lien collateral 5½ per cent bonds, including this issue, requires $390,500.

A. B. Leach & Co., Inc., and Halsey, Stuart & Co. are marketing the issue.

Small Nebraska Company Shows Deficit from Operations.

The Palisade Telephone Co., one of a group owned by the Western Public Utilities Co., of Denver, Colo., with Fred J. Upright of Grant as president and manager, and Gray B. Gray of Denver, secretary, reports to the Nebraska State Railway Commission that it failed by $22 to meet expenses during 1929.

The company has a fixed investment of $21,458.33 and total assets of $22,202.39. It has stock, bonds and payables totaling $21,909, depreciation reserve of $683.64 and a deficit in surplus of $390.25.

The following returns are made: Exchange revenues, $2,589; toll, 187; miscellaneous, $25; total, $2,801. Maintenance expenses were $360.18; depreciation, $763.34; a total for the two items of $1,123.82; traffic, $710; general, $995.96. Total expenses, $2,829.78. Interest payments of $362.03 made a deduction of $390.25 from surplus. The company operates 147 town and 229 rural stations.

New York Telephone Co. Sees Rise in Costs.

"Because of lessened business activity, the forecast for the year 1930 indicates that with no change in rates the increase in gross revenue would be less than the increase in 1929," says J. S. McCulloh, president of the New York Telephone Co. in the annual report issued recently. "There will be an increase in expenses, and, were the old rates continued in effect, the usual dividend on the common stock would not be earned in full in 1930," the report adds.

Mr. McCulloh states that gross expenditures of the company for additions, betterments and replacements in 1929 exceeded all previous records, and amounted to $101,700,000, an increase of more than $26,000,000 over expenditures for these purposes in 1928.

"The financial requirements for new construction were met by funds borrowed on open account from the American Telephone & Telegraph Co., which will later be cared for by permanent financing," the report says, adding that no stocks or bonds were issued by the company last year.

The heavy expenditures in 1929 were necessary, it is asserted, to meet an unprecedented demand for service, resulting in a net gain in telephones of 166,453; to effect improvements in the service, and to provide for future growth. The daily average of originating calls was about 12,450,000, an increase of more than 1,000,000 over the daily average in 1928.

"Fourteen new buildings were completed and major additions were made to four buildings," the report says. "The total buildings in service at the end of the year was 198, which, together with leased quarters, provided an aggregate floor area of 9,600,000 square feet for company use.

"Thirty-four new central offices, comprising switchboards and associated equipment, were established, and 99 central office switchboards were enlarged. During the year 570,208 telephones were connected and 403,755 were disconnected. The total telephones owned and operated at the end of the year was 2,637,118.

"The exchange wire system was increased by 107,000 miles, making a total of 1,225,000 miles of toll wire in the plant at the end of the year. Toll cable was increased by 460 miles, of which 137 miles was underground and 323 miles aerial cable. Of the total, 12,900,000 miles of exchange and toll wire in the plant at the end of the year, 17 per cent was in cable

and 83 per cent of it was below ground."

Work was begun last year on a new toll cable route from Albany through the Adirondacks to Canadian points, while underground conduits for toll cables are being placed between New York and Albany, and this work was about half completed at the end of the year.

Net income amounted to $29,655,543 after all charges and taxes in 1929, equal after preferred dividends to $9.99 a share earned on 2,806,000 common shares, comparing with $29,169,020, or $9.82 a share, on the same capital in 1928.

The earnings statements for two years compare as follows:

	1929.	1928.
Tel. oper. rev....	$199,642,411	$180,908,592
Tel. oper. exp....	144,569,542	134,273,507
Uncollectable	1,250,843	856,065
Taxes	12,692,132	13,164,313
Oper. income...	$ 41,129,894	$ 32,614,757
Other income.....	3,653,276	5,245,298
Gross income...	$ 44,783,170	$ 37,860,055
Interest, etc.....	15,127,627	8,691,035
Net income.....	$ 29,655,543	$ 29,169,020
P'f'd dividends...	1,625,000	1,625,000
Common dividends	22,448,000	22,448,000
Surplus	$ 5,582,543	$ 5,096,020

Total assets of the company were $755,773,547 at the close of 1929, against $689,537,588 at the end of 1928. Fixed capital was $677,990,913, against $617,175,764 the year before, and investments were $39,675,619 against $35,876,619.

Chesapeake & Potomac of Maryland Submits Annual Report.

In its report to the stockholders, the board of directors of the Chesapeake & Potomac Telephone Co. of Maryland disclosed that additions and betterments to be made to the telephone system in Maryland during 1930 will amount to $8,245,000 with net additions of $4,660,000.

In the next five years, the company estimates gross expenditures for additions and improvements to the telephone system involving expenditures of approximately $35,100,000, with net additions of $17,300,000.

It is estimated that the company will operate about 225,000 telephones by the end of 1934. During 1930 the company estimates a net gain of 9,500 telephones in Maryland.

On December 31 there were 207,998 telephones operating from 130 central offices in the state. This was an increase of 9,572 telephones and two central offices. To secure this net gain, the company installed 35,165 telephones and disconnected 25,593, showing that it was necessary to install more than 3.6 telephones to make a net gain of one.

To meet the public's requirements for telephone service, extensive improvements were made to the system in Maryland during 1929. Gross expenditures for plant additions and betterments and replacements amounted to $4,602,647, retirements amounted to $2,230,356, making net additions $2,372,291.

Among the major additions were the purchase of land, erection of buildings and building additions, involving expenditures of $266,334; installation of switchboards and other central office apparatus, $237,335; installing telephones and private branch exchange switchboard equipment on the subscribers' premises, $347,873; and outside plant including both exchange and toll lines, $1,339,022. General equipment added to the system in 1929 involved expenditures of $176,105.

Maryland telephones are connected by 821,408 miles of wire, of which more than 65 per cent is in underground cable.

Nebraska Company Pays Dividends and Adds to Surplus.

The annual report of the Union Telephone Co. of Wausa filed with the Nebraska State Railway Commission shows the possession of assets of $84,907.46, which includes a fixed investment of $66,372.35. The company has stock of $51,200 outstanding, payables of $5,441.14, a depreciation reserve of $22,817.23 and a surplus of $3,677.48.

Revenues were $22,001, made up of exchange, $15,706.10; toll, $4,556.56, and miscellaneous of $1,738.34. The total expenses were $15,926.61, made up of maintenance, $4,961.42; depreciation, $1,574.48; total of two items, $6.535.90; traffic, $3,884.05, and general, $5,506.66.

The company had an operating income of $6,074.39 and miscellaneous revenues of $558.55. Taxes paid were $1,186.17; miscellaneous expenses, $1,104.78; dividends of $4,096, leaving $246.05 for surplus.

Exchanges are operated at Wausa, with 243 town stations, and at Crofton, with 197 town and 266 rural. The company switches 600 stations for farm lines. Emil Engdahl is president, and J. E. Baggstrom, secretary and manager.

Mountain States T. & T. Makes 1929 Report to Stockholders.

Current maintenance expense of the Mountain States Telephone & Telegraph Co. for 1929 was $3,365,000, according to the annual report from the directors to the stockholders.

The total was a 14 per cent increase over the previous year, due in a large measure to dial conversion in Denver and placing toll lines in condition for further "carrier" operations.

The Mountain States Telephone & Telegraph Co. reported a net income of $3,934,441, after all taxes, reserves and charges, equal to $10.23 a share earned on 384,397 shares of stock, comparing with $4,111,105, or $10.69 a share, earned in 1928.

Expenditures for construction in 1929 were the largest in the history of the company. Thirteen and a half millions were expended to take care of increased business, improvements in service and replacements of plant, and to make additions and rearrangements in plants for future requirements.

In all, something over 18,000 miles of copper wire were added throughout the Mountain States system.

Approximately 830,000,000 local calls and 17,000,000 long distance calls were handled by the company during 1929. The average interval from the beginning of placing a local call until the called subscriber answered was 22.9 seconds in 1929, as compared with 24.4 seconds in 1928.

The company has an average of 8,901 employes, of these 3,855 being men and 5,046 being women. At the end of 1929, 5,983 employes were subscribing for 26,524 shares of company stock.

Associated Telephone Utilities Co. Votes Additional Stock Rights.

The directors of the Associated Telephone Utilities Co., Chicago, Ill., have voted additional stock subscription rights entitling holders of record on March 22 to subscribe at $24 a share for additional no-par common shares on the basis of 25 per cent of their holdings.

The rights will expire on April 15. An instalment purchase feature is included in the subscription plan.

Ohio Bell Company Report Shows Gain in Telephones.

New high figures for telephones in service, expenditures for betterments, and net earnings were reported by the Ohio Bell Telephone Co. for the year ended December 31. The per share earnings were not so large as reported in 1929, in view of the fact that $15,000,000 additional common stock was sold to the American Telephone & Telegraph Co. during the year.

Net income for 1929 totaled $8,351,373. After allowing $1,975,793 for preferred dividends there remained $6,375,580, equal to $6.37 a share on 1,000,000 shares of common stock. This compares with $6,086,644, or $7.16 a share, on 850,000 shares the year before. Balance sheet shows $6,261,946 of working assets and $3,560,689 of working liabilities. Appropriated surplus of $3,500,000 and unappropriated surplus of $2,865,632 are shown. Assets total $170,043,383.

Continued increase in the cost of telephone service is described in the annual report. During the year 250,574 telephones were connected and 188,314 disconnected. The net gain of 62,260, which brought up total of telephones in service to 709,713, was the largest for any year in the company's history, says E. F. Carter, president. He also reported continued improvement in local and long distance service.

"To care for the growth in business and to continue betterments of plant and equipment, $28,135,477 was spent on new construction, which was greater than that for any other year, and exceeded 1928 by $7,793,910.

"During the year, $15,000,000 of common capital stock was issued, bringing the outstanding common stock to $100,000,000. Preferred capital stock remains at $28,219,700. Balance sheet shows the investment to be $21,526,741 in land and buildings, $134,696,179 in telephone plant and equipment, and $3,253,983 in general equipment. Other permanent investments aggregate $2,168,702. Net income for the year 1929 was $8,351,373."

A table of statistics accompanying the report shows that the company operates 199 central offices, or exchanges, in the state, and connects with 388 other telephone companies in its territory. The total of employes December 31 was 15,258, of which 10,120 were women.

Pacific T. & T. Co. Authorizes Rights to Stockholders.

The directors of the Pacific Telephone & Telegraph Co. recently authorized the issuance to stockholders of rights to acquire one additional share of common stock at $100 a share for each two shares of preferred or common stock held, of record on March 7. The rights will expire on March 31, 1930.

Of the $87,500,000 maximum proceeds from this offering, the American Telephone & Telegraph Co. is expected to provide $71,544,200, as it owns 640,427, or 78.1 per cent, of the 820,000 shares of 6 per cent preferred stock outstanding and 790,457, or 85 per cent, of the 930,000 common shares outstanding. Based on the common stock alone, the rights are worth $20 to the holder of each common share.

The aggregate value of rights is $35,000,000, accruing to the holders of common and preferred stocks of the company jointly. Payment for the stock subscribed to by stockholders may be made in installments of $30 on March 31, $30 on June 30 and the balance, less 6 per cent interest, on September 30, at the option of the stockholder. Final payment may be made on June 30 at a price less 6 per cent interest.

Canadian Bell Company Submits 1929 Report to Stockholders.

The Bell Telephone Co. of Canada reported for year ended December 31, 1929, net income of $5,528,068 after taxes and charges, equivalent to $8.35 a share (par $100) on 661,901 shares of stock outstanding at end of year and $9.10 a share on 607,493 average number of shares outstanding during the year.

This compares with a net income of $5,596,685 or $9.27 a share on 603,405 shares outstanding during preceding year.

Ohio Bell Telephone Co. Statistics as of December 31, 1929.

Central offices	199
Private branch exchanges	5,261
Connecting telephone companies	388
Central offices operated by connecting companies	730
Telephone stations—Ohio Bell	709,713
Service and private line stations	3,745
Connecting company stations	365,035
Total stations owned by The Ohio Bell Co. and its connecting companies	1,078,493
Miles of pole line	16,979
Miles of wire	2,855,881
Number of employes—Men	5,138
Women	10,120
	15,258
Total payroll expenditures, 1929.	$20,637,968

The statement for year 1929, compares:

	1929	1928	1927
Gross	$40,031,357	$36,510,732	$33,210,645
Net aft taxes	8,068,005	7,674,342	6,519,754
Bal. aft chgs	5,528,068	5,956,685	4,812,545
Surplus	668,125	931,744	589,869

Some 227,828 telephones were connected in 1929, and 180,617 disconnected; net gain 47,211. This was by far the biggest inward and outward movement in the company's history.

Gross additions to plant in 1929 amounted to $30,529,000; and plant, the original cost of which was $9,311,000, was retired from service.

The volume of completed toll business increased 11 per cent. The average length of time for handling toll calls was reduced to 1.6 minutes. The proportion of toll calls completed while the customer remained at the telephone was increased to 8.3 per cent.

The number of troubles per telephone was reduced 12 per cent. Since 1926 troubles have been reduced 43 per cent through improved maintenance.

Extensions to toll plant in 1929 amounted to more than double the outlay of 1928. In all, about 14,000 miles of talking channels were added.

Current assets at end of 1929 are carried at $7,496,692, against current liabilities of $4,607,606, leaving a working capital of $2,889,086, compared with $854,579 at end of 1928.

Total assets are at $179,680,187, against $150,610,573 at end of 1928. Among assets, plant now stands at $163,158,524, against $140,680,066, investments at $6,899,631, against $3,834,547 and deferred assets at $2,098,426, against $1,782,909.

Among liabilities, capital stock is at $66,190,140, against $60,340,500 and bonds at $57,556,820, against $41,434,094.

Accrued liabilities are shown at $2,293,883, against $2,176,810; employes' stock at $1,971,004, against $1,816,856, and deferred liabilities $19,116, against $122,019. Depreciation reserve has been increased to $31,089,328 from $29,454,642; capital premium is $2,239,217, against $2,061,000, and surplus $6,226,407, against $5,269,816.

Growth of company's business during 1928 is indicated by the fact that the net gain in telephones for the year was 47,211, compared with 45,862 in 1928. This growth involved connecting 227,828 telephones and disconnecting 180,617. Of the new telephones installed, 11.7 per cent represent extensions added by subscribers.

Current Price Quotations on Listed Telephone Stocks.

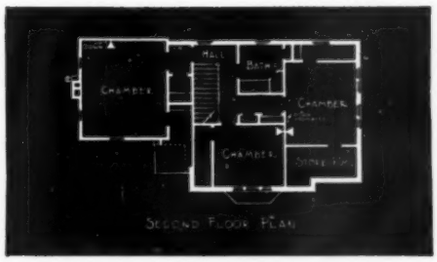
	March 14, 1930 High.	Low.	Last.
American Telephone & Telegraph Co.	239¼	237¼	237⅞
Associated Telephone & Telegraph Co., A	61¼	61⅛	61¼
Associated Telephone Utilities Co.	28½	27½	28½
Associated Telephone Utilities Co., rts	⅞	⅜	¾
Community Telephone Co.	22	21	22
Diversified Investments, Inc.	51	51	51
Empire Public Service Co., A	21¾	21⅜	21½
International Telephone & Telegraph Corp.	67⅞	63⅞	63⅞
International Telephone & Telegraph Corp. rights.	2	1½	1⅝
Middle Western Telephone Co.	26½	26	26½
New England Telephone & Telegraph Co.	145	145	145
New England Telephone & Telegraph Co., rts.	8¾	8⅝	8¾
Pacific Telephone & Telegraph Co., com.	144	140	140
Pacific Telephone & Telegraph Co., 6, pf.	122½	121¾	122
Pacific Telephone & Telegraph Co., rights	20	19⅞	19⅞
Standard Public Service Co. (A)	12½	12	12
Southwestern Bell Telephone Co., 7, pf.	120½	120¼	120¼
Western Continental Utilities, A	21⅞	21¾	21¾
Western Power, Light & Telephone Co.	27¼	27¼	27¼

OVER THE COUNTER QUOTATIONS.

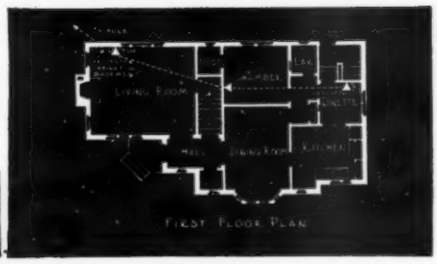
	Mar. 14. Bid.	Asked.	Mar. 13. Bid.
Associated Telephone & Telegraph Co., pf.	103	105	.....
Associated Telephone & Telegraph Co. (D)	51	54	....
Associated Telephone Utilities Co., $6, pf.	84	88	....
Associated Telephone Utilities Co., $7, pf.	94	100	....
Bell Telephone Co. of Canada	154	157	....
Bell Telephone Co. of Pennsylvania	114½	116½	....
Cincinnati & Suburban Telephone Co. (4½)	116	119	116
Cuban Telephone Co.	125	...	125
Cuban Telephone Co., 7, pf.	102	...	102
Diversified Investments, Inc., 7, pf.	103	105	...
Diversified Investments, Inc., part. pfd.	66½	68½	....
Lincoln Telephone & Telegraph Co.	120	...	120
Mountain States Telephone & Telegraph Co.	140	142	...
National Telephone & Telegraph Co., pf.	103	105	...
National Telephone & Telegraph Co., A.	52	54	....
New York Telephone Co., pf.	114⅝	115½	.....
Northwestern Bell Telephone Co., pf.	107	...	107
Ohio Bell Telephone Co.	111	114	111
Peninsular Telephone Co.	27	30	27
Peninsular Telephone Co., pf.	105	...	105
Porto Rico Telephone Co.	85	...	85
Porto Rico Telephone Co., pf.	100	....	100
Rochester Telephone Corp., 1st pf.	107½	.....	107½
Southern New England Telephone Co.	175	183	175
Wisconsin Telephone Co., pfd.	111	113	.....

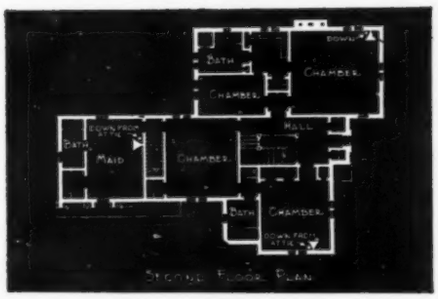
On the Pacific Coast... as elsewhere through the Country... *home buyers appreciate*

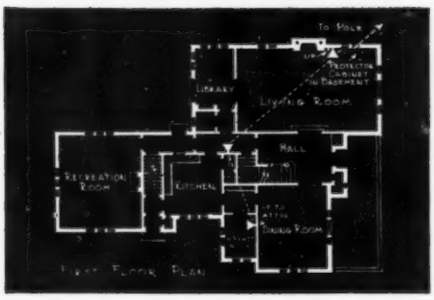
Telephone Convenience



This house, 3602 Bella Vista Avenue, Seattle, Wash., has a complete metal conduit installation throughout. There are six telephone outlets: downstairs in living-room, chamber and dinette, and in three upper bedrooms. FRANK M. DEVER, Builder. *Plans furnished by Universal Plan Service., Inc.*







In this house, located at 310 West Highland Drive, Seattle, complete telephone convenience is provided for by six outlets: living-room, hall and breakfast nook on the first floor and in three upstairs bedrooms. FRANK M. DEVER, Builder. *Plans furnished by Universal Plan Service, Inc.*

TELEPHONE convenience is everywhere an important factor in the sale of residences. A Pacific Coast builder writes:

"Telephone outlets placed in convenient locations are of vital importance when building homes for sale. I use conduit leads, concealed within the walls, to each outlet, thus eliminating exposed wiring.

"The rates for extension telephone service are low and I realize that buyers of my homes will have from two to four telephones installed. I therefore place from four to seven outlets in every home I build. Placing conduit for telephone outlets is inexpensive and it provides for a convenience that the prospective home owner appreciates."

Your local Bell Company will be glad to have a representative help plan telephone convenience for your new building projects. There is no charge. Just call the Business Office.

The desirability of providing adequate built-in conduit and outlet arrangements to meet the convenience of home buyers is emphasized in the above advertisement, appearing this month in a group of builders' magazines.

Convention of North Dakota Association

Annual Meeting of North Dakota Telephone Men at Grand Forks Indicates Realization That Rural Lines Should Be Owned and Operated by Commercial Companies at Rates to Pay Adequate Dividends on Investment—Fine Addresses

Seventy-five members of the North Dakota Telephone Association attended the 24th annual convention in Grand Forks on March 11, 12 and 13. A. H. Bakken, of Mayville was elected president to succeed D. L. Vail, of Milnor. J. G. Odegard, of Washburn, was elected vice-president and Mr. Vail was named secretary-treasurer for the coming year. Mr. Odegard is the former secretary-treasurer and Mr. Bakken is last year's vice-president.

Besides a number of interesting addresses in which rural telephone problems were stressed, the outstanding features of the convention were the annual banquet, funfest and dance and the power arc follow-up demonstration. Tracy R. Bangs, Grand Forks attorney for the Northwestern Bell company and a toastmaster of more than 40 years' experience, presided at the banquet. The power arc follow-up demonstration was given by H. B. Nelson of Minneapolis and M. S. Hinchberger of Fargo, both connected with the Northwestern Bell company.

Interesting displays were set up at convention headquarters in the Dacotah Hotel by a group of representative telephone manufacturing and supply companies.

Opposition to the Couzens communication bill now pending before Congress was expressed by speakers including President Vail, and a resolution was approved near the close of the three-day meeting voicing the sentiment that telephone affairs should be regulated by state bodies and not by a federal commission as proposed in the Couzens measure.

H. A. Brown of Coopertown and M. M. Borman of Abercrombie were reelected to the association's board of directors and C. F. Carlson of Plaza was elected to the board succeeding R. S. Rodenhuis of Minot.

The morning of the first day of the convention was occupied with registration, payment of dues, meeting old friends and visiting the displays of telephone equipment and supplies.

The meeting was called to order by President D. L. Vail and welcome to Grand Forks was extended by President John L. Hulteng of the Grand Forks City Commission. Dr. E. N. Hegge, of Hatton, secretary of the Red River Valley Telephone Co. made the response.

Secretary J. G. Odegard read the minutes of the 23rd annual convention and the annual report of the secretary-treasurer. The annual address of the president was given by Mr. Vail.

"The general situation in the telephone field," President Vail said, "shows a normal growth of subscribers in the larger cities and towns and a loss of rural subscribers in the past year. This can be attributed to economic conditions, I believe. The smaller Independent companies

D. L. Vail of Milnor, N. D., Former President of North Dakota Telephone Association, Was Elected Secretary-Treasurer.

of North Dakota face the problem of providing better service and still paying adequate dividends on that improved service.

"The Northwestern Bell Telephone Co. has spent millions in the past few years for better toll line service. It realized that its whole scheme would break down, however, if its long distance users received poor service from connecting lines of small companies. So the Bell people have bought many short lines and improved them in order that their toll service might be raised to meet the company's standard of universal service.

Fay Harding, member of the state board of railroad commissioners said he favored state regulation of public utilities and emphasized that he is opposed to federal control proposed in the Couzens bill. "Ninety per cent of the telephone service in North Dakota is intrastate business," he said, "and it should be controlled by state regulation instead of from Washington."

W. J. Brazell, general manager of the Dakota Central Telephone Co., of Aberdeen, declared that two-thirds of the small exchanges in the Dakotas are being operated at a loss. This loss, he said, must be overcome and converted into profit through proper methods. The speaker explained that there are about 600 telephone exchanges in the Dakotas and that of these there are about 20 having 1,000 or more telephones on their lines. Another hundred have 400 to 1,000 telephones leaving close to 500 concerns classed as "small exchanges."

"The small exchanges," Mr. Brazell said, "serve 45 per cent of all telephone subscribers in the two states. Many changes have taken place in the past few years in small exchanges. Many exchanges which formerly had only part-time service have been forced to go on a 24-hour basis, increasing the value of the service as well as the cost of furnishing it.

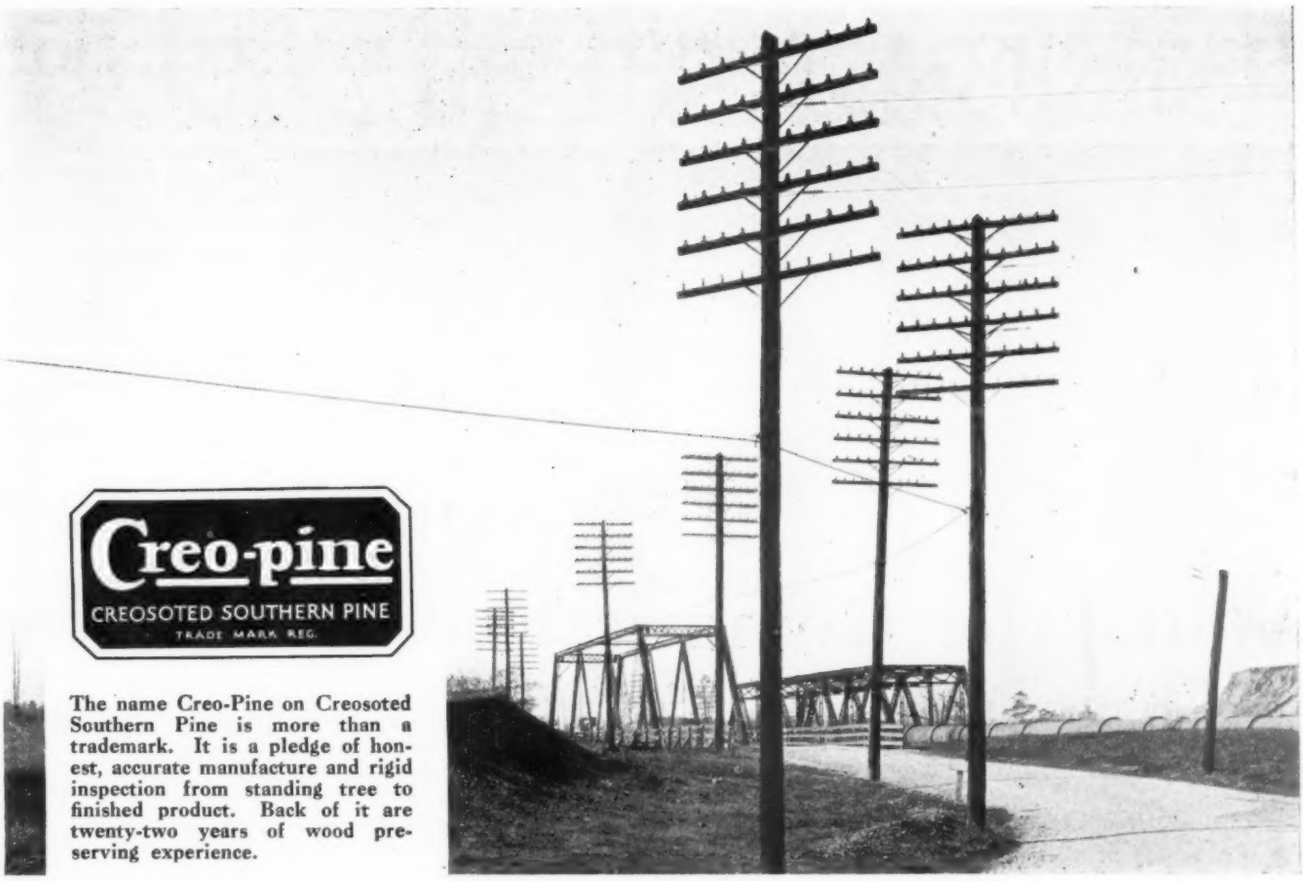
"Two-thirds of all these rural exchanges are operating at a loss today. This loss must be turned into a profit if the exchanges are to survive. Three things are necessary in order to make a profit in the small exchanges: You must determine the grade of service necessary to meet requirements. Good physical property is important, but most necessary of all is good personnel; their contacts can either make or break a telephone company."

Lyman Baker, of Bismarck, deputy state tax commissioner, predicted that a bill would be introduced at the 1931 legislature authorizing the state board of equalization to fix the taxable value of telephone and power companies. At present, he said, the state board of equalization is operating without any law governing the assessment of utilities with property extending through hundreds of taxing districts.

After a luncheon at noon for the women attending the convention, A. D. McKinnon of Bismarck, project engineer of the state highway commission addressed the gathering. He told of the work to be done on the highways under the road program for the present year and of the necessity for moving many of the telephone lines of rural telephone companies.

"We will cooperate with the telephone people in this matter," Mr. McKinnon said, "in order to give every company ample opportunity to move its pole lines back from the highways without unnecessary expense. The pole moving will affect mainly the smaller companies. The plan of the highway commission is to draw up its road program in January and to notify telephone companies affected by road improvement plans well in advance of the proposed work."

F. M. Parsons of the Central West Public Service Co., Omaha, Neb., discussed



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CREOSOTED SOUTHERN PINE
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The name Creo-Pine on Creosoted Southern Pine is more than a trademark. It is a pledge of honest, accurate manufacture and rigid inspection from standing tree to finished product. Back of it are twenty-two years of wood preserving experience.

For Tomorrow's Voice Highways

Larger and larger cables and ever increasing long distance circuits are placing a heavier load each day on telephone poles. But however heavy the load the message must go through quickly—with no allowance for pole failures. To meet these new conditions—you may buy Creo-Pine poles. They are made of creosoted Southern Pine. Numerous tests have proven it the strongest of common pole woods. Effectively fortified against decay and the attacks of insects by the S. W. P vacuum-pressure process of creosote injection, they maintain this strength over a long period. Shipments can be made from either of our treating plants, and further information about Creo-Pine poles will be given gladly by any of the sales offices listed below.

Creo-Pine Products
Include:
Poles
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CLEVELAND DETROIT CHARLOTTE, N.C.

the question, "Can the furnishing of rural telephone service be made profitable?"

"With few exceptions," the speaker said, "revenues for rural telephone subscribers in this and adjoining states are not sufficient to pay the cost of providing the service they receive. Dependable and satisfactory service requires standardized and improved construction, removal of obsolete equipment, competent help, proper maintenance of equipment, elimination of free service, adequate rates, proper accounting and adequate depreciation reserve.

"This can be accomplished if the rural companies are taken over where necessary by commercial companies of the right sort. The present situation calls for concerted action on the part of telephone people of the state."

"The Land of the Northwestern Bell" was the topic of an illustrated talk given by Chas. E. Hall of Omaha, Neb., secretary of the Northwestern Bell Telephone Co. The speaker, who is one of the oldest telephone officials in the Northwest in point of service, described in words and pictures events of the whole history of the Bell company.

The first part of the lecture related to scenes and incidents in the early days of telephony including famous Indians, Indian scouts, and scenes of the frontier. From this point, Mr. Hall told of the progress of the Bell company from the simple equipment of many years ago to the modern systems of the present day.

Man-made lightning flashed from a steel "storm cloud," inflicting damage to miniature cables and switchboards before the eyes of the delegates during the power arc follow-up demonstration on the last day.

Mr. Nelson and Mr. Hinchberger, who gave the demonstration, used a miniature pole line, wires, protector blocks and switchboard. Current at 500 volts was used and the protection of subscribers' stations from power arcs created by the artificial lightning was demonstrated. The lightning bolt flashed from the "storm cloud" to the wires but was carried off through a ground without reaching the substation.

Another demonstration showed how protector blocks on telephone poles carry off lightning power arcs, preventing breakdown of cables and protecting switchboards in telephone offices.

Leo A. Worchesek, manager of the Grand Forks exchange and E. E. Greeling of Fargo, informational activities supervisor for the Northwestern Bell, had charge of local convention arrangements.

What the Commissions Are Doing

Up-to-the-Minute News Regarding the Activities of State and Interstate Commissions, Courts and City Councils in Matters Concerning Telephone Companies—Summary of Commission Orders and Schedule of Telephone Hearings

Agreement Reached on Chicago Franchise of Illinois Bell.

Agreement upon a new franchise ordinance for the Illinois Bell Telephone Co. in Chicago has been reached and it was submitted to the council committee on gas, oil and electric light on March 14 by Ald. B. A. Cronson, chairman of the subcommittee which has been negotiating with company officials for months. No action was taken upon it by the committee at that time.

Under the new ordinance the company will be given a 23-year franchise, with the option to renew or to cancel on six months' notice. This will make the ordinance expire at the same time as the company's bonds.

The ordinance provides that the company shall pay 3 per cent of its gross receipts to the city for the use of conduits and for other privileges. For the period between February 28, 1929, when the old franchise expired, and the date when the new one goes into effect, the company is to make payment to the city on the 3 per cent basis, plus 6 per cent interest.

Other provisions are:

The telephone company agrees to pay the municipality quarterly instead of semi-annually. This is expected to be worth $30,000 yearly to the city in interest receipts.

From the time the franchise goes into effect until the end of December, 1935, the city is to pay the company for telephone service on a half-rate basis, excepting in the cases of the fire and police departments.

From the start of January, 1936, to the end of December, 1946, it is to pay on a 75 per cent basis, except for the fire and police departments. During the remaining eight years, the payments shall be full rate.

The company agrees to furnish free service to the fire and police departments, including service from the central offices to all branch offices of the departments.

Separate agreements must be made by the school and library boards, which are not included in the franchise.

Hearings in the New York Telephone Co. Rate Case.

The hearing before the New York Public Service Commission on the rates of the New York Telephone Co. was continued on March 11, 12 and 13 at Albany.

H. C. Carpenter, vice-president of the New York Telephone Co., was questioned by Corporation Counsel Hilly of New York. Mr. Carpenter was asked whether there was in the record in the case, or can be prepared and produced, evidence upon which telephone rates could be determined separately for Greater New York. Mr. Carpenter told Mr. Hilly that such data was in the record.

Mr. Hilly questioned him on the business trend. He stated that the volume of trading in the stock market had increased from 56 per cent for the week ending January 4 last to 86 per cent for the week ending March 8 as compared with similar weeks in 1929. Mr. Hilly further questioned Mr. Carpenter, using data on freight car loadings, automobiles manufactured, and office equipment sales to show that general business conditions are on the upward trend. Mr. Carpenter said that he was not familiar with the ratios of increase which Mr. Hilly read into the record. Each of the three items selected by Mr. Hilly show marked improvements both over 1929 and since January 1, 1930.

Mr. Carpenter told Mr. Hilly that the telephone calling rate in New York City continues less than during the same period in 1929. In reply to questions by Mr. Hilly, Mr. Carpenter admitted that the actual net revenue of the company for 1929 exceeded the company's provisional estimate made in the fall of 1928 by 10 per cent. The provision estimate of net revenue, Mr. Carpenter said, was $32,300,000, while the actual net revenue was $35,500,000.

Mr. Carpenter further testified that the rates proposed by the company would during 1930 fail by $4,000,000 to produce a 7 per cent return upon the rate base claimed by the company.

Colonel Charles G. Blakeslee, counsel for the commission, called Michael Hartnett, of New Rochelle, building inspector in that city. The buildings of the telephone company in New Rochelle, the witness said, could be constructed at the present time for about the same cost as in 1928. James McQuen, a New Rochelle real estate broker, said the value of the company's real estate in New Rochelle had not increased since 1928. The general trend of business, he said, was on the upgrade.

On March 12 Mr. Hilly asked Mr. Carpenter to file a copy of the computations by which the company estimated that the expense of depreciation during 1930 will be $32,091,000, and the latter agreed to furnish the data.

Mr. Hilly asked him to explain why in

Backing up the Telephone–

The Man in the Iron Mask—electro-welding a switchboard frame—is one of many skilled workers who see that every part is made right.

Wire Enough in a Single Telephone Exchange to span the United States three and a quarter times!

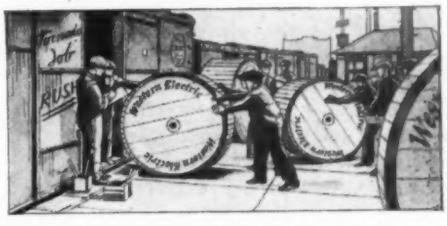
To make the telephone

and back it up with all the apparatus and supplies needed for nation-wide service is a work of infinite variety.

Buying rubber from Singapore, mica from India, conduit from Ohio—Making each year a million telephones, 15,000 miles of cable, switchboards by the trainload—Distributing supplies to 32 warehouses, holding them ready for the telephone companies of the Bell System—Installing the equipment in all their telephone exchanges—

All this is the responsibility of Western Electric—whose dependable service of supply helps make possible dependable telephone service.

From Pencils to Telephone Poles everything the Bell Telephone System uses is found in Western Electric's market basket.



Meeting Emergencies is the real test of a service. Western Electric's system of supply distribution is always ready!

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SINCE 1882
FOR THE
BELL SYSTEM

the company's 1930 estimate of expenses, supervision of operators is increased over 12 per cent or $500,000, while there is an increase in operators of but 3 per cent. Mr. Carpenter said that as dial offices are cut into service, less operators are required, while this does not materially decrease the supervisors required. Replying to Mr. Hilly's questions, Mr. Carpenter explained that the 1930 increase in the expense of station removals and changes is due to the decreased schedule of charges for moves and changes made to subscribers, thus leaving a greater proportion of such expense to be borne by the company.

Cuthbert Reeves, a valuation engineer of Buffalo, was called as a witness by Colonel Blakeslee. Mr. Reeves testified that the value of the telephone company's real estate in Niagara Falls at the present time does not exceed the value in 1928. G. W. Cramer, an architect and general contractor, of Niagara Falls, also testified that the value of the telephone company's real estate in Niagara Falls is somewhat less at the present time than in 1928.

Joseph M. Kreimip, clerk of the United States District court, was called by Mr. Blackman for the purpose of identifying certain exhibits submitted in the federal court case dealing with the rates of depreciation. Since the original exhibits of the court can not be left as exhibits in the present commission proceeding, Mr. Blackman offered for identification copies of them. The purpose of these exhibits is to support the company's contention that annual rates of depreciation were passed upon by the court and are, therefore, not subject to revision by the commission.

H. C. Carpenter was cross-examined on March 13, by Colonel Blakeslee and Corporation Counsel Rupp, of Buffalo. Mr. Ruff's questions pertained particularly to the difference in toll charges between points within New York state and between points, one of which is within and the other without New York state. Mr. Carpenter said that while the A. T. & T. Co. had made three or four reductions in interstate toll charges, the New York Telephone Co. had not reduced interstate rates, due to the fact that the whole matter of rates was being tried in the federal court.

A. M. Welch, vice-president of the telephone company, followed Mr. Carpenter on the stand. His appearance was for the purpose of further explaining his former testimony, concerning expected revenues during 1930. Mr. Blackman, attorney for the company, put into evidence through Mr. Kelley, an engineer, a statement showing that during the years 1924 to 1929 inclusive, the company has failed by $57,000,000 to receive a 7 per cent return upon the value of its property computed in accordance with the court's opinion.

The introduction of this statement was objected to by Col. Blakeslee, Mr. Hilly, Judge Fennell and Mr. Rupp. It was marked for identification but was not received in evidence. Charles T. Russell, vice-president and general counsel for the company, testified concerning the estimated increase of $84,000 in legal expenses during 1930 over 1929. He said this increase is due to the natural expansion of the legal department and to an anticipated settlement with Mr. Blackman for his service as attorney in the court case.

The attorneys on both sides engaged in considerable discussion concerning the admission in this case of exhibits from the federal court case. Commissioner Van Namee, who was sitting alone, reserved decision until the other members of the commission can be conferred with.

Arkansas Commission Gives Approval for Bond Issue.

The Arkansas Railroad Commission has granted authority to the Interstate Public Service Co., of Little Rock, to issue $700,000 in the first mortgage and collateral 6 per cent gold bonds for making improvements and betterments to water systems and telephone plants operated by the company in Arkansas and Texas.

The commission also authorized the company to sell 10,000 shares of preferred and 20,000 shares of common stock.

Arkansas Court Allows Only Nominal Damages Recoverable.

The Arkansas Supreme Court, in a decision rendered March 3, 1930, held that in an action to recover special damages alleged to have been sustained by failure of the Southwest Telephone Co. to complete a long distance call, only nominal damages were recoverable.

The action was instituted by Mr. Carter against the Southwest Telephone Co. to recover special damages which he alleged he sustained by failure of the company to complete a long distance telephone call placed at Pocahontas, Ark., for Mr. Reed of the Reed-Harlin Grocery Co., West Plains, Mo., by which he intended to cancel a contract for the sale of flour theretofore made.

The facts, briefly stated, are as follows: Mr. Carter, a resident of Pocahontas, is engaged in the brokerage business, buying and selling flour and feed, and does a considerable portion of his business by telephone, through the exchange at Pocahontas owned by the Southwest Telephone Co.

On September 18, or 19, 1928, Mr. Carter called Mr. Reed and sold him 1,050 barrels of flour at $5.25 per barrel, provided he did not notify him to the contrary. He then called the mill from which he purchased flour and was advised that flour had advanced. The call in controversy was then placed for Mr. Reed to advise him that he could not deliver at the price quoted, but failed to get him, and he was compelled to complete his contract at a loss of 35c per barrel on the flour. Mr. Carter gave no notice to the telephone company as to the nature of his call, its purpose, or that he would suffer special damages if it was not promptly completed. He waited nearly all day before making complaint about delay, and was advised they had no record of the call.

At the conclusion of the testimony the telephone company requested a directed verdict which was refused. The case was tried to a jury, resulting in a verdict and judgment for Mr. Carter for $150.

It has long been the rule in Arkansas that special damages are not recoverable for breach of contract in the absence of notice to the party in default that more than ordinary damages will be sustained in the event of failure to perform, nor unless such knowledge "be brought home to the party sought to be charged under such circumstances that he must know that the party he contracts with reasonably believes that he accepts the contract with the special condition attached to it."

The Arkansas court, in Southern Telephone Co. v. King, supra, recognized a distinction in the business done by a telephone company from that done by a telegraph company when it was said:

"A telephone company does not receive a message, nor does it transmit and deliver it in the ordinary acceptation of those words. It merely furnishes to the patron facilities for carrying on a conversation at long distance." This is a correct statement of the fundamental difference in their respective business. A telegraph company receives, transmits and delivers messages, while a telephone company furnishes the "facilities" for conversation at a distance.

Knowledge of the contents of the message is brought home to the telegraph company from the written message itself, whereas, the only knowledge brought home to a telephone company is that one person desires to converse with another person, unless notice is given of the nature and importance of the conversation desired, and that injury will be sustained from a failure to furnish the facilities. Here the undisputed proof is that no such notice was given.

"It necessarily follows from what we have said," the court said, "that only nominal damages were recoverable, and the court should have so instructed the jury." Judgment was therefore reversed for a new trial.

Ohio Commission Reduces Telephone Company Valuations.

Values of the Ohio Central Telephone Corp. exchanges at Galena and Sunbury have been reduced for rate purposes by the Ohio Public Utilities Commission.

The revised valuations, if not protested, will be adopted as permanent, and used as the basis of establishing telephone rates in these two communities.

The value set for the Galena exchange by the commission engineers, $12,383.27,

was nearly half that claimed by the company, $24,702.68, while at Sunbury the commission set the valuation at $47,220.26, approximately $41,500 less than the valuation claimed by the telephone company. A final ruling on these proposed rate increases will be announced later, Ira T. Sprangle, superintendent of investigation for the commission, stated.

Arguments Made in Appeal of Indiana Order in La Porte Case.

Final arguments attacking and defending rates of the La Porte County Indiana Telephone Co., were heard on March 8 in superior court No. 2, by Judge Orlo R. Deahl of South Bend, Ind. At the conclusion of the arguments the court took the submission of facts and briefs from both sides to assist him in reaching a decision.

It was expected that Judge Deahl would give his decision some time this week.

Commission Approves Security Issues of Lincoln Company.

Orders have been entered by the Nebraska State Railway Commission authorizing the Lincoln Telephone & Telegraph Co. to issue $1,000,000 of 5 per cent bonds and 2,000 shares of Class A 6 per cent preferred stock. Originally the company had asked for 10,000 shares of stock, but finding the bond market favorable, it was decided to save in interest charges by providing for a partial financing of its reconstruction and new construction work by this method. The budget for the year calls for a expenditure of $2,025,000, and deducting salvage values of $982,843, this left $1,222,000 as the net cost of additions to the property.

The bonds have been sold to the Harris Trust & Savings Bank of Chicago on the basis of 98.5 per cent of face value, and were readily disposed of to investors. The difference between the new capital required and the proceeds of the bond issue is $257,000, and with the stock previously issued and that now authorized, this gap in the financing will be closed.

Previous to these orders, the company had $2,000,000 of 5 per cent bonds outstanding, and this open mortgage has 16 years to run. There is also capital stock outstanding of $7,199,475, with total liabilities, including depreciation reserve, surplus and other items, of $13,884,000, represented by property in place and working assets. When the new bonds and stock have been sold, fixed capital will be increased correspondingly. This is now $12,258,000. The commission finds that the working assets are more than three times bills and accounts payable.

The operating statement for 1929 shows gross revenues of $3,202,000 and expenses of $2,559,000, leaving net earnings, available for interest and dividends of $643,235. The annual interest requirements and amortization charge against this sum is $162,313, and with other interest deductions, leaves $454,441 of net profits. The annual dividends on the preferred stock to be outstanding $3,989,925, will be $239,389, which means that there will be available for dividends on the preferred stock of nearly twice the requirements.

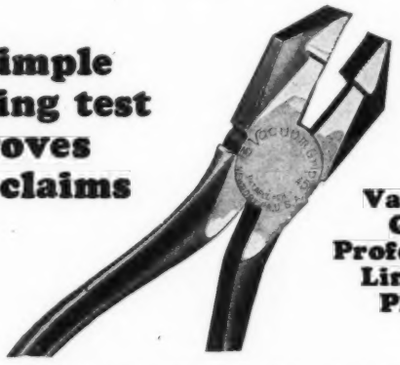
The commission says the books of the company fairly reflect all of its transactions, and that 6 per cent yearly is set up for depreciation reserve, based on book cost of fixed investment, to pay for plant removed from service. It, therefore, finds that the bonds and preferred stock are reasonably required for the purpose of the corporation, grants the request and orders periodical reports as to disposal of proceeds.

New York Telephone Co. Authorized to Issue New Stock.

The New York Telephone Co. has been authorized by the New York Public Service Commission to issue $90,700,000 additional capital stock, of which $20,700,000 will be used for the liquidation of indebtedness and $70,000,000 to reimburse expenditures from income.

At the end of 1929 the company had borrowed $52,800,000 from the American Telephone & Telegraph Co. for construction, equipment and betterments. According to the annual report, financial requirements

A simple running test proves our claims



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Name of company or individual etched FREE on handle of each pair.

IT'S an easy matter to check up on our claims for these pliers. A simple running test soon proves that, for sheer strength, sustained cutting power and all-around durability in rough daily service, they stand absolutely alone.

Ordinary pliers made of soft open hearth steel with a *thin shell* of hardening (*case-hardened* pliers) naturally can't take the same punishment as pliers made of electric furnace high carbon, Molybdenum alloy tool steel, hardened and tempered *thru and thru!* That's the kind of steel used in Vacuum Grip Pliers—and that's why they outlast ordinary pliers three and four to one!

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Write for catalog describing over 50 Vacuum Grip patterns and sizes.

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Vacuum Grip REG. U.S. PAT. OFF **Pliers**

Built *UP* to a Standard—Not *DOWN* to a Price

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The Last Word in Quality! *"Always Reliable"* Torches and Furnaces

No. 79 Quart
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Gasoline-Kerosene
Furnished with brass or steel tank
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After fifty-four years of concentrated effort in one direction, we feel assured in offering the telephone service men, this line of torches and furnaces that are especially designed for their work.

That is why these torches and furnaces are the favorite in the giant industry today.

Order through your distributor or mail order to us with your distributor's name.

OTTO BERNZ CO., INC.
Newark, New Jersey
—— Stocks in ——
Chicago, Ill. San Francisco, Cal. New York City

for new construction last year were met by such borrowings, and will be cared for by permanent financing.

The commission's order will, therefore, permit the company to offer additional stock, at $100 a share, to the American Telephone & Telegraph Co. this year, as the latter company owns $280,600,000, or 100 per cent, of the New York Telephone Co. stock now outstanding.

The New York Telephone Co. also has $25,000,000 preferred stock and $131,074,965 long-term bonds outstanding. Including premiums on capital stock, the authorized increase will bring total capital stock of the company to $396,471,244, not including funded debt, notes and advances.

Small Michigan Company Properties Taken Over by Bell.

The Interstate Commerce Commission recently authorized the acquisition by the Michigan Bell Telephone Co. of the properties of the Beaverton Telephone Co., Beaverton, Mich., which serves 75 owned and 129 service stations, all of those owned being urban stations.

The applicants entered into an oral agreement by which the Bell company agreed to purchase the Beaverton company, free from all liens and encumbrances, for $5,250. An appraisal made by the outside plant engineer of the Bell company found the reproduction cost new of the properties to be $7,618, and less depreciation $5,322.

Southwestern Bell Authorized to Acquire Properties in Texas.

The Southwestern Bell Telephone Co. was authorized last month to take over the telephone properties of John W. Miller, doing business as the Mesquite Telephone Co., with exchanges located at Mesquite and Elam, Dallas county, Tex. The part of the application which requested approval of the acquisition by Mr. Miller of the exchange of the Southwestern Bell company at Kaufman, Tex., was dismissed for lack of jurisdiction.

The exchange at Mesquite serves 165 city and 282 rural subscriber stations; the Elam exchange serves 28 owned stations, and the Kaufman exchange serves 424 owned and 59 service stations.

For the first nine months of 1929, the commission found, operating revenues and operating expenses of Mr. Miller's exchanges were $9,069.50 and $6,950.96, respectively. In the same period the corresponding figures for the Kaufman exchange were $8,677 and $5,901, respectively.

The Bell company is subject to the interstate commerce act. It did not appear from the record that Mr. Miller is, or upon acquiring the Kaufman exchange would be, subject to that act. Under section 407 of the transportation act, as amended, the commission has jurisdiction to issue a certificate thereunder only when it appears that the consolidated company would be subject to the interstate commerce act. Therefore the commission denied the request of Mr. Miller to acquire the Kaufman exchange.

Summary of Commission Rulings and Schedule of Hearings.

INTERSTATE COMMERCE COMMISSION.

March 1: Acquisition by the Bell Telephone Co. of Nevada of the properties of the Utah, Nevada & Idaho Telephone Co. found to be of advantage to the persons to whom service is to be rendered and in the public interest.

ALABAMA.

March 17: Hearings on a citation to require the Southern States Utilities Co. to show cause why it should not file with the commission a copy of its audit and appraisal of the telephone properties purchased from the South Central Telephone Co. Citation was issued by the commission on March 4.

The commission on November 21 issued an order requiring the South States company to file an accounting and appraisal of the properties, and on February 8 the commission again called upon the company for an audit. On February 26 the commission notified the South Central that if a copy of the audit and appraisal was not filed with it by March 4, the commission would issue a citation to compel the company to comply with its order.

ILLINOIS.

March 12: The General Telephone Co. of Illinois authorized to sell to the Illinois Consolidated Telephone Co. its Litchfield, Nokomis, Raymond, Hillsboro, Farmersville, Harvel, Irving, Waggoner and Witt properties for $50,000. The deal involves transfer by the Illinois Consolidated company to the General Telephone Co. of its property in Connellson and vicinity in Montgomery county. The order directs that present rates be continued unchanged.

March 18: Hearing before Commissioner Gilbert in the matter of complaint of Murphysboro Telephone Co. relative to Carrier Mills Independent Telephone Co. operating a telephone system in Carrier Mills without having a certificate of convenience and necessity from the commission.

Application filed by Carrier Mills company for a certificate of convenience and necessity to operate a telephone exchange in Carrier Mills.

March 18: Hearing before Chairman Hadley in the matter of the proposed advance in rates for service of the 4-C Telephone Co. in Cissna Park, East Lynn and Rankin, stated in rate schedules Ill. C. C. 3 original sheets 1-A rendered by the company.

March 18: Hearing before Commissioner Gilbert in the matter of the proposed advance in rates for service of the Automatic Home Telephone Co. in Pontiac, Livingston county, stated in rate schedule Ill. C. C. No. 5 sheet 5-A filed by the company.

March 18: Hearing before Commis-

(*Please turn to page* 49.)

Equipment at LaGrange, Ind., Exchange

Central Office Telephone Equipment Installed by LaGrange County Telephone Co., LaGrange, Ind., in January of This Year, But a Part of Complete Rehabilitation Program—Advertisement to Convert Subscribers to New Service

By H. W. Hogue,
District Manager, Kellogg Switchboard & Supply Co.

Saturday evening, January 18, at 10:00 p. m., the LaGrange County Telephone Co. cut over to its new Kellogg common battery equipment just installed in the newly-acquired telephone building at its main exchange in La Grange, Ind. The work of installing the equipment in the telephone building had been in progress for six weeks by Chief Installer C. M. Robinson of the Kellogg Swithboard & Supply Co. of Chicago.

The new equipment consists of a three-position Kellogg board, wired and equipped to suit the particular needs of LaGrange. There is one toll position equipped with ten pairs of toll cords, two pairs of universal cords for pay station lines, and five hospital cords. Each of the two local positions has 17 pairs of Kellogg full-feature cords. These cords provide the modern type of service, such as line lamp recall, instantaneous disconnect, automatic ringing, etc.

For local service there are 200 common battery lines. The rural service is handled by 80 common battery rural lines, provided with reversing jacks for ringing any one of the ten bells on each of the lines. There are ten common battery free toll lines, ten pay station lines, 20 drop-ended toll lines and five toll recording trunks connected to the switchboard.

The ringing is five-frequency harmonic on all local lines and ten-party harmonic ringing on the rural lines.

The harmonic ringing equipment is operated by an interrupter driven by a 110-volt A. C. motor or a 40-volt D. C. motor. This apparatus also provides "out of order" tone for the hospital cords. The equipment is so arranged that should the 110 volt alternating current fail, the interrupter is instantaneously switched to the 40-volt direct current motor operated from the storage battery.

Everything from the top *of* the pole to the bottom of the hole

GraybaR

THE GRAYBAR TAG—SYMBOL OF DISTRIBUTION

This Company has contributed co-ordination to what was once the unwieldy procedure of specifying, securing and assembling the many materials for a line construction project. Graybar is returning a substantial saving annually to those engaged in this work. Offices in 76 principal cities.

EXECUTIVE OFFICES: GRAYBAR BUILDING, LEXINGTON AVE. AND 43RD ST., NEW YORK, N. Y.

PROGRESS DEMANDS Many New Designs--

But Old Favorites Are Still Essential

COMMUNICATION engineering has made rapid strides in the past few years. The world today seems small indeed when one can communicate with the opposite sides of the earth, across mountain range, ice and snow and ocean's wide expanse as easily, audibly and as quickly as across the width of a room. But combinations of wire and radio have introduced technical considerations of extreme importance and operating problems which only electrical measuring instruments of great refinement and reliability can solve.

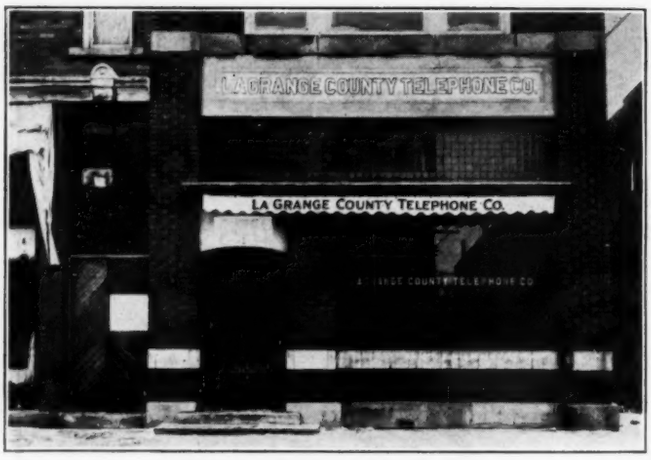
Throughout all these progressive developments Weston research and manufacturing facilities have kept pace with communication needs—producing new types of instruments to meet each phase of progress. Weston has continuously served the telephone field as technical collaborator and pioneer, each year bringing out new designs essential to the industry's progress.

In spite of these progressive developments, the older models like old friends, continue to give important service. Among these are the wire chief instruments, known as Models 24 and 57, the indispensable line inspectors found in practically every office and on every system large and small throughout the country.

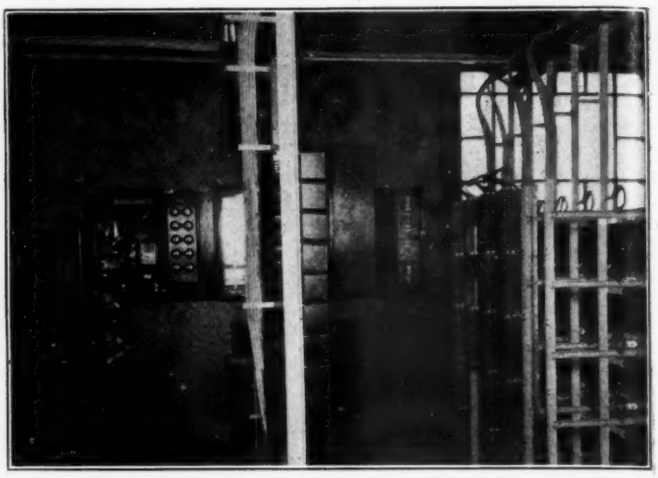
Whatever your testing problems, take them up with Weston, the world's accredited laboratories for electrical measurement research and the acknowledged leader in the manufacture of quality instruments.

Weston
PIONEERS SINCE 1888
INSTRUMENTS

WESTON ELECTRICAL INSTRUMENT CORP.
576 Frelinghuysen Avenue Newark, N. J.



Exchange Building of La Grange County Telephone Co., La Grange, Ind.



Main Frame Equipment With View of Power Apparatus in the La Grange, Ind., Exchange Building.

The main exchange battery consists of 20 Philco cells. The rest of the battery equipment consists of 11 cells of noise-killing battery. Charging is done by a 12-ampere tungar rectifier, automatically controlled.

The new central station equipment is but a part of the complete rehabilitation program. The outside plant has been, to a great extent, rebuilt with modern cable construction.

Since the new service by common battery equipment is an innovation to the subscribers, the advertisement reproduced on this page was used as a part of the educational program in converting them to the new service.

LaGrange has a population of about 2,000, is the county seat of LaGrange County, and is at the junction of U. S. Road No. 20 and Indiana Road No. 9. It is located in one of the richest agricultural districts in Indiana, a district producing more mint than any other county in the state.

The LaGrange County Telephone Co. was acquired in September, 1928, by the Interstate Telephone & Telegraph Co. It operates nine exchanges located in the following towns: Ashley, Howe, Mongo, Rome City, South Milford, Shipshewana, Stroh, Wolcottville and LaGrange.

Extensive improvement throughout this territory which includes 2,300 subscribers, has been climaxed by equipping the main or central exchange at LaGrange with this modern telephone building and high type of telephone equipment. These improvements have been made with the idea in mind that it is good business to furnish the public with as high a type of telephone service as it is possible to give.

Officers of the LaGrange County Telephone Co. are: Pierre F. Goodrich, president; Sam Tomlinson, vice-president; R. W. Frost, secretary and treasurer, and P. J. Maloney, district manager.

W. B. Stants is the local superintendent. Myron Teal and Miss Leona Williams are in charge of the commercial work and Miss Eva Philbreck is chief operator.

The entire staff is "on its toes" striving to live up to the new standards.

The Best That Money Can Buy

To Subscribers of the LaGrange County Telephone Company on LaGrange Town and Rural Lines

A new telephone plant will be opened at LaGrange Sunday which is the best that money can buy. There is none superior or later anywhere in the world.

We would ask your patience during the period that operators are becoming accustomed to the new equipment.

We would kindly ask you to observe carefully the following directions.

1. Call only by number, never by name. Temporary directory cards are being sent to all subscribers on the LaGrange system. Use numbers at left of name for rural subscribers until notified to cross out these numbers.

2. Do not ask central to ring again on failure to get a party. The ringing is done automatically without control of the operator. You can hear the buzz in your own receiver as the phone rings at the other end of the line.

3. To recall central press down receiver hook once and release. This signals the operator. Do not jiggle the receiver hook; to do so disconnects.

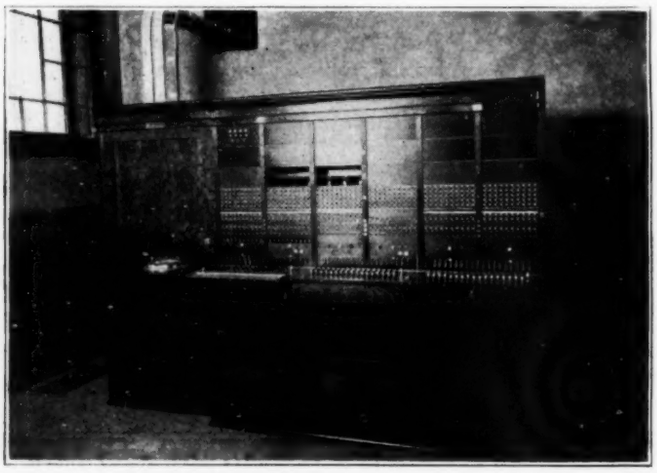
4. In calling a number use every numeral separately viz: two-five seven-W.

CALL BY NUMBER

THANK YOU

LaGrange County Telephone Co.

Advertisement Announcing New Service of La Grange County Telephone Co., La Grange, Ind.



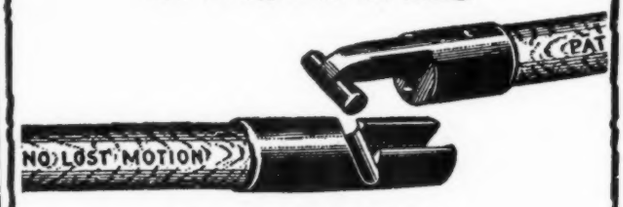
Kellogg Service Switchboard Installed at La Grange, Ind.—The Commercial Office of La Grange County Telephone Co.

Cope Specialties

COPE Quick Coupling Conduit Rod is outstanding for its many salient features. It is designed for strength, durability and quick installation. They will not come uncoupled in the duct.

- Conduit Cleaning Tools
- Concrete Cutters
- Cable Racks
- Cable Rack Arms
- Cable Reel Jacks
- Cable Drawing Guides
- Cable Drawing Protectors
- Cable Duct Shields
- Cable Pulling Eops
- Guard Rails

Send for copy of our new catalog.



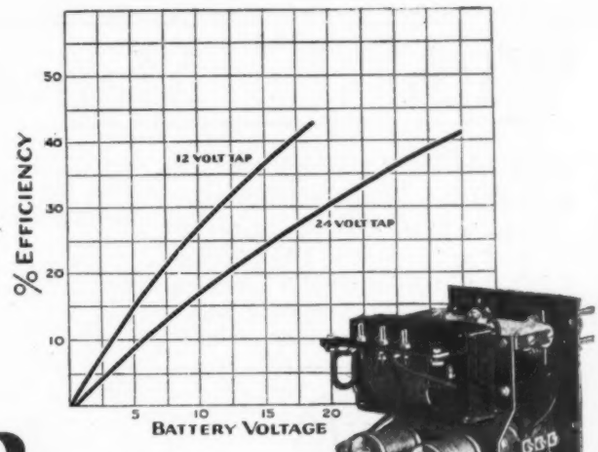
T. J. COPE
Manufacturers of
Complete Equipment for Cable Installation
6120-6122 Vine Street, Philadelphia, Pa.
19 South La Salle Street, Chicago, Ill.

HAZARD
RUBBER INSULATED
WIRE & CABLE

Telephone Wire of Hazard quality

Every type from Drop Wire to Heavy Cable

HAZARD INSULATED WIRE WORKS
DIVISION OF THE OKONITE COMPANY
WORKS: WILKES-BARRÉ, PA.
NEW YORK CHICAGO PHILADELPHIA PITTSBURGH ATLANTA
ST. LOUIS BIRMINGHAM SEATTLE SAN FRANCISCO LOS ANGELES



RECTOX *needs no attention ...no maintenance*

Rectox with the cover removed.

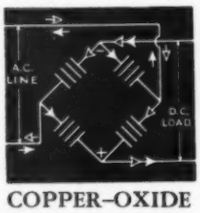
The copper-oxide principle on which the Rectox operates eliminates all moving parts, bulbs and liquids. When properly applied Rectox rectifiers and chargers will operate without attention or maintenance.

Style No. 558711, illustrated, was designed especially for switchboard service and is provided with mounting studs in the rear, and with metal feet permitting it to be placed on the floor, bench or shelf, as desired. It will charge 12 or 24-volt batteries at the maximum rate of 1 ampere. The charging rate may be varied from approximately 100 milli-amperes to 1-ampere by means of slide-band resistors. Other types of Rectox rectifiers and chargers are available for different services.

Complete information will be furnished upon request.

Rectox is the original rectifying apparatus operating on the copper-oxide principle.

RECTOX



COPPER–OXIDE RECTIFICATION

Westinghouse
T 31051

Westinghouse Electric & Manufacturing Co.
Regulator Section East Pittsburgh, Pa.

Please send me more information about Rectox Copper-Oxide Rectification.

Name.....
Company.....
Address.....
City.....State.....

With the Manufacturers and Jobbers

Improved Desk Telephone Announced by Automatic Electric.

Automatic Electric Inc., of Chicago, has announced an improved model of its Type 21 desk stand telephone, which has proved so sturdy and reliable in operation in hundreds of exchanges throughout the country. The base is now constructed of bakelite, with the space for the dial inset so that only the upper portion of the dial projects above the surface of the base. A soft rubber ring is used instead of the conventional felt pad, for the bottom of the base.

Latest Model of Type 21 Automatic Electric Desk Telephone.

The new design adds beauty and improves the general appearance of this instrument to a considerable degree. Besides this, the possibility of bending the dial plate or injuring the dial in any other way if the telephone should be dropped accidentally, is virtually eliminated by this method of construction.

The rubber ring on the base, due to its design and construction, definitely prevents any possibility of slippage when the subscriber is dialing a number. In all other respects, including circuit arrangements, this Type 21 telephone is unchanged from preceding models.

Radio Talks Given by Staff Members, Bartlett Tree Expert Co.

"Radio Tree Talks" is the title of a booklet issued by the department of public relations, Bartlett Tree Research Laboratories, under the direction of the F. A. Bartlett Tree Expert Co., located at Stamford, Conn.

The book contains 13 15-minute broadcasts which were given over station WEAF and affiliated stations of the National Broadcasting Co. the latter part of last year and early this year, in order to stimulate interest in the improvement of shade tree growth through scientific methods. The talks were all given by members of the Bartlett Tree Expert Co. staff.

Some of the talks are "Shade Trees and the 1929 Drought," by G. M. Codding; "Trees and Conservation," by T. H. Reuman; "Important Tree Troubles," by C. C. Lawrence; "Personalities in Tree History," by G. S. Jones; "Environmental Influence on Trees," by E. P. Felt; "The Christmas Tree Tradition," by E. A. Connell; "New Desirable Shade Trees," by H. J. Neale and "Trees and Real Estate," by Joseph P. Day.

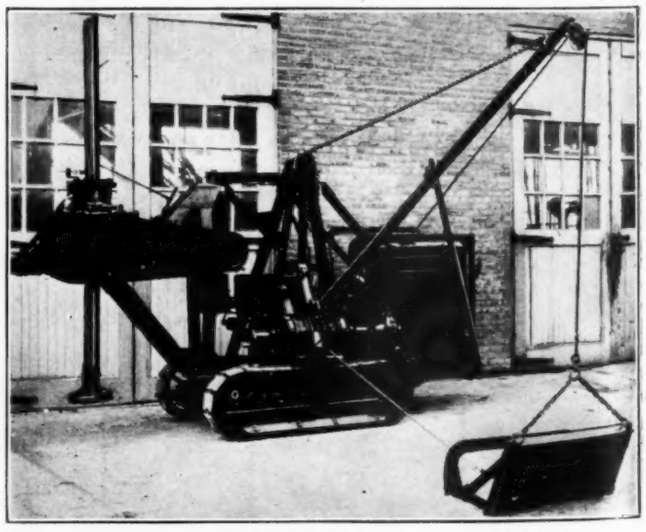
Cleveland Trencher Co. Announces New Tamper-Backfiller.

The Cleveland Trencher Co. of Cleveland, Ohio, which for many years has been manufacturing trench-digging equipment, has just announced a new machine that combines the related operations of tamping and backfilling. This machine is of special interest because by its use the necessity of tamping and backfilling with hand-labor is eliminated.

The Cleveland tamper-backfiller is a compact, powerful machine built in accordance with the policies adopted by that company for many years, in the construction of their trenchers—Cleveland "Baby Digger" and Cleveland "Pioneer."

The Cleveland tamper-backfiller is but 58 inches in extreme width, thus permitting it to be used in the narrow and confined areas. It is mounted on full crawler tracks for ease of handling and to enable it to travel over rough ground, cross excavations, etc.

The tamping mechanism, which will work either at the center or side of the machine, consists of a 150-pound steel tamping head which can be dropped 45 times per minute from a height of 26 inches. Gear shift speed changes provide instant means of determining the number of blows struck per given distance, according to the requirements of the soil.



The New Machine to Be Used for Tamping and Backfilling, Manufactured by Cleveland Trencher Co., of Cleveland, Ohio.

It is interesting to note that with this mechanical tamping, materials such as wet clay, which is exceedingly difficult to tamp by hand, are very easily handled with the Cleveland tamper. This also eliminates any necessity of hauling away the wet clay, and the expense of backfilling with some other material like sand or gravel. Moreover, the Cleveland tamper will replace the earth so tightly that less remains to be hauled away.

The usual method of tamping with the machine is to straddle the trench and tamp in the center but where obstacles do not permit this type of work, the mechanism of the Cleveland tamper may be easily and quickly swung so that the machine may run parallel with the trench and tamp at full efficiency at the side.

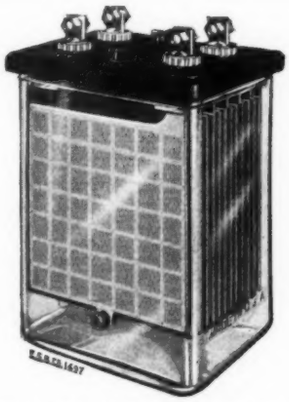
Backfilling and tamping speeds of 3½, 7, and 11½ feet per minute are available and the unit has a road speed of five miles per hour.

The backfiller, of a conventional type, operates with a telescopic boom with a length which can be varied from 14 feet 2 inches (telescoped) to 20 feet 2 inches (fully extended). The entire unit is self-contained and is powered by a four-cylinder Hercules model OX gasoline motor.

Stromberg-Carlson Pick-up for Reproduction from Records.

As one of the results of its 35 years' experience in telephone engineering, the Stromberg-Carlson Telephone Mfg. Co. has made it possible to play phonograph records with all the brilliance and living naturalness of radio. These 35 years of experience in telephony lie behind the No. 3-A and No. 3-B magnetic pick-up outfits which makes possible perfect reproduction from records.

The No. 3-A pick-up is especially designed for radio receiving sets using power detection and requiring that the pick-up cir-



Exide Chloride Battery Cell Type FMGO, 480 ampere hour capacity for dependable telephone service.

THESE are the reasons for Exide superiority in the telephone field:—

1—Exide Quality—the result of over 41 years of battery building experience.

2—The Exide line covers every telephone need.

3—Exides assure long, dependable, telephone battery service.

4—Exide cost is moderate—both first cost and maintenance cost.

Small wonder that Exides have been serving the telephone industry for over 35 years

Let These Four Points Simplify Your Selection of Telephone Batteries

Exide BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia
World's largest manufacturers of storage batteries for every purpose
Exide Batteries of Canada, Limited, Toronto

SERVICE *and* SATISFACTION *Quick!*

STOP LOOK LISTEN

Your copy of the
"Suttle Salesman"
is in the mails this week.

Be sure to get your copy and look over the specials in construction equipment.

Suttle Equipment Co.
FACTORY AND MAIN OFFICE
Lawrenceville, Illinois

TELERING

For Central Office and PBX Ringing

ONE REED!

ONE CON-TACT!

IDEAL WAVE FORM

ORDER ONE ON TRIAL.

NO OBLI-GATION TO KEEP

Fully Guaranteed

Converts 60 Cycle Lighting Current to 20 Cycle Ringing Current.

POSITIVELY NO RADIO INTERFERENCE

Very low current consumption.

Model EX-3 has been proven the ideal ringing machine by hundreds of satisfied users.

Price $44.00 — F. O. B. Elyria
IT PAYS FOR ITSELF

Sold by Leading Telephone Distributors

Telkor, Inc., Elyria, Ohio

(Write for booklet)

Mentioning TELEPHONY gives your inquiry tone.

You Can't Carry Speech With Paste

COMPARE the "works" of a Storm King Battery with any other. Rip 'em open.

In any other Battery you find a thick layer of paste between the mix and the zinc. It takes up space that should be used for current generating materials, dries out hard, soon shuts off the normal action and goes dead.

In a Storm King you find a thin, specially prepared patented insulator that admits 20% more mix in the same size battery, retains moisture, stays alive, permits prompt recuperation, and adds 25% more life.

These are the main facts behind the increasing use of Storm King Batteries in Telephone Service. The real savings come after you hook them into your lines. You save two ways: first cost and longer life.

GENERAL DRY BATTERIES
INCORPORATED
CLEVELAND, O.

Makers of all types of dependable Dry Batteries for Radio, Ignition, Flashlight and General Use.

STORM
TELEPHONE
KING
DRY CELL
FOR TELEPHONE
SERVICE
THIS Telephone dry cell is carefully manufactured under a new process and contains materials of the highest grade.
Its quick recuperative properties and high maintained voltage make it unexcelled for telephone service.
General Dry Batteries, Inc.
Cleveland, Ohio, U.S.A.

cuit work directly into the grid of the amplifying tube, such as the Nos. 641, 642, 846, and 652 of the Stromberg-Carlson line. The No. 3-B outfit is for use with receivers where the pick-up jack is connected to the primary of the first audio transformer, such as the 523, 633, 635, 636, 638 and 734 Stromberg-Carlson receivers.

The pick-up units or heads of these outfits are of the low impedance, flexible armature type. As no separate scratch filter unit is incorporated in these outfits, the volume controls are mounted in the base of the pick-up arms to provide compactness. Due to the fact that the voltage generated by the low impedance pick-up units is very low, a step-up transformer is provided to raise the voltage to a value suitable for operating the audio amplifier.

By having the pick-up armature short and light in weight, and by using a more flexible cushion, these units provide great flexibility of armature operation. This flexibility as compared with the larger armature on high impedance pick-up heads, insures greater accuracy of reproduction, as well as reduces wear on phonograph records, thus giving increased life of the records, in some cases by as much as 30 times.

With a view of providing the correct weight on the needle point as well as to insure against any rattling in the joint when the pick-ups are operating on a record, counter-balancing springs are provided in the swivel joints of the pick-up arms. The pick-ups are designed for operation with full-tone needles, either of the steel type or semi-permanent type.

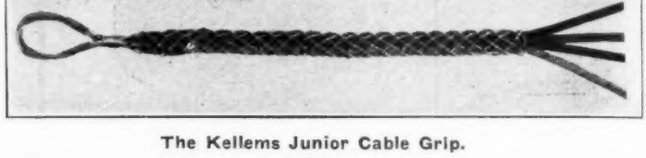
Tallest Building Wired with Use of Kellems Cable Grips.

A recent development of Kellems Products, Inc., 6 Varick St., New York, is a small cable grip, Kellems junior, for pulling wire through branch circuit conduits. Cable grips have been used on lead-covered cable for a number of years but this is the first time they have ever been adapted to wire. Hatzel & Buehler, Inc., used them in wiring the Chrysler Building in New York City, and report appreciable savings in both wire and labor.

The grip entirely does away with the old method of skinning the wires (stripping or cutting off the insulation with a knife), bending the copper conductors through the hook in the fish wire (steel tape), and twisting them together.

In the Chrysler Building most of the runs were of four No. 14 rubber-covered wires. Under the old method it was necessary to strip back each wire about three inches, and as this wire was cut off and thrown away, the saving can be seen readily. Figuring three inches on each of four wires meant a foot of wire wasted on every pull. Of the 1,500,000 feet of wire pulled in the Chrysler Building, at least 1 per cent was saved, or 15,000 feet on this one job. Only 16 grips were used for the entire 1,500,000 feet.

The new method is also much quicker—the wires are merely held together and slipped into the grip, the whole operation taking about half a minute. It is also much safer. It eliminates the danger of copper slivers and cuts to the workman's hands.



The Kellems Junior Cable Grip.

Testing is greatly facilitated. As the insulation is intact on the wire and each wire is separate from the others, there is no possibility of wires being forgotten and left twisted together. It has often happened in the latter instance that a switch might inadvertantly be thrown, causing a short-circuit and much damage and annoyance.

The grip is adjustable. Those used in the Chrysler Building take from two to five of No. 14 rubber-covered or equivalent wires. The General Railway Signal Co. pulled bunches of eight and 12 wires of No. 14 double-braid, rubber-covered in the 8th avenue subway in New York City.

Eight More FWD's for Pacific Telephone & Telegraph Co.

Eight more FWD 2-ton line construction trucks have been ordered for the Pacific Telephone & Telegraph Co. They will be used to dig holes and set poles, carry loading coils, pull poles to location, take the crew out to the job, take crew back from the job, carry supplies to the new line being built across the hills, carry all of the tools necessary in building the line, string wire, pull underground cable, speed up installation of new lines, cut maintenance costs, and do other odd jobs that may turn up.

These eight construction trucks will be added to the large fleet already in the service of the Pacific Telephone & Telegraph Co. When this double quartette arrives on the scene, there will be over 100 FWD's in Bell telephone service in California.

Orders Additional Stromberg Toll Positions for Mankato, Minn.

It has just been announced that the Tri-State Telephone & Telegraph Co. of St. Paul, Minn., has contracted with the Stromberg-Carlson Telephone Mfg. Co. for two additional positions for the toll switchboard at Mankato, Minn.

WHAT THE COMMISSIONS ARE DOING.

(*Continued from page* 42.)

sioner Wilson in the matter of the joint application of the Avon Telephone Co. and Intra State Telephone Co. for an order approving sale by the former and purchase by the latter of all of the telephone property of the Avon company, and also for a certificate of convenience and necessity to the Intra State Telephone Co. to operate a telephone utility in that territory.

March 19: Hearing before Commissioner Gilbert in the matter of the proposed advance in rates for service of the Illinois Bell Telephone Co. in Decatur, stated in rate schedule Ill. C. C. No. 2 filed by the company.

March 19: Hearing before Chairman Hadley in the matter of the proposed advance in rates for service of the Cordova Telephone Co. in Cordova, stated in rate schedule Ill. C. C. No. 3 of the company.

Petition filed by citizens of Cordova in connection with proposed advance in rates.

INDIANA.

March 4: Petition filed by 25 residents of Oakville, Cowan and Mt. Pleasant, asking that commission direct the Indiana Bell Telephone Co. to reinstate telephone service for them. The petition stated that the petitioners have been patrons of the Indiana Bell for a number of years, served through the Muncie system, and that recent sleet storms had damaged the telephone wires and poles. The petitioners said it was their understanding that the company did not intend to repair the wires and reinstate service.

March 7: Bigspring Telephone Co., Boone county, authorized to increase rates from $1.10 to $1.35 a month.

March 7: United Corp. filed petition asking for an adjustment and increase of rates at Rossville and Moran.

March 8: Petition granted of Home Telephone Co. of Portland for increased rates. The new rates, effective April 1, are: Business, one party, $3.50; business, two-party, $3.00; residence, one party, $2.50; residence, two-party, $2.00; rural business party, $3.00; rural residence party, $1.50.

March 8: Walkerton-North Liberty-New Carlisle Telephone Co. authorized to buy the telephone companies in each of the three towns and to issue 900 shares common stock at $100 par value to make the negotiations.

March 11: Petition filed by Indiana Commercial Telephone Co. for permission to take over the properties of nine Indiana companies and consolidate them under one management. The companies are: Home Telephone Co., Elkhart; LaPorte County Telephone Co., LaPorte; Logansport Home Telephone Co., Logansport; Steuben County Telephone Co., Angola; Fayette Telephone Co., Connersville; Greencastle Telephone Co.; Liberty Utilities Co.; Royal Center Telephone Co. and Putnam County Telephone Co. The total valuation placed on the nine companies is $4,550,000. Permission is asked to issue 61,000 shares of no par value common stock; 11,000 shares of no par value preferred stock and first mortgage gold bonds in the amount of $2,250,000. Headquarters of the Indiana Commercial Telephone Co. are at Elkhart.

March 12: Hearing held at Elwood in the matter of the increased rates asked by Leisure Telephone Co. No opposition was presented to proposed increase.

March 13: Hearing on petition of New Brunswick Citizens Telephone Co. for authority to adopt rules and increase rates.

March 24: Hearing at Coatesville in the matter of the joint petition of the Coatesville Telephone Exchange Co. and the Coatesville Telephone Co. for the purchase and sale of plant and equipment.

March 29: Hearing continued in the matter of the petition of the Clayton Telephone Co. for an increase in rates.

MISSOURI.

March 7: Application of Middle States Utilities Co. of Mo. for permission to file amended rate schedules and to file new collection rules for Gainesville and Lawson, respectively, approved with certain exceptions.

March 11: In the matter of the complaint of service of W. E. Holman, et al. vs. J. L. King Telephone Co., the commission ordered the J. L. King company, Conway, to rebuild the telephone lines and rehabilitate the switchboard in such manner as to enable it to give subscribers satisfactory service.

March 12: Application approved of Clyde Gardner for permission to own a telephone exchange in Washburn and for a certificate of convenience and necessity.

NEBRASKA.

March 5: Application filed by the Lincoln Telephone & Telegraph Co. to cancel a rate inherited at Davenport from former owners, allowing a charge of 25 cents a month extra for desk sets, it being the policy of the company to make no extra charge for this type of equipment.

March 5: Application filed by the Lincoln Telephone & Telegraph Co. for validation of a rate of $2.50 net a month for restricted six-party rural business service.

March 6: Application filed by North Mills Telephone Co., of Mills, for validation of $7.50 a year rate for switching service, granted.

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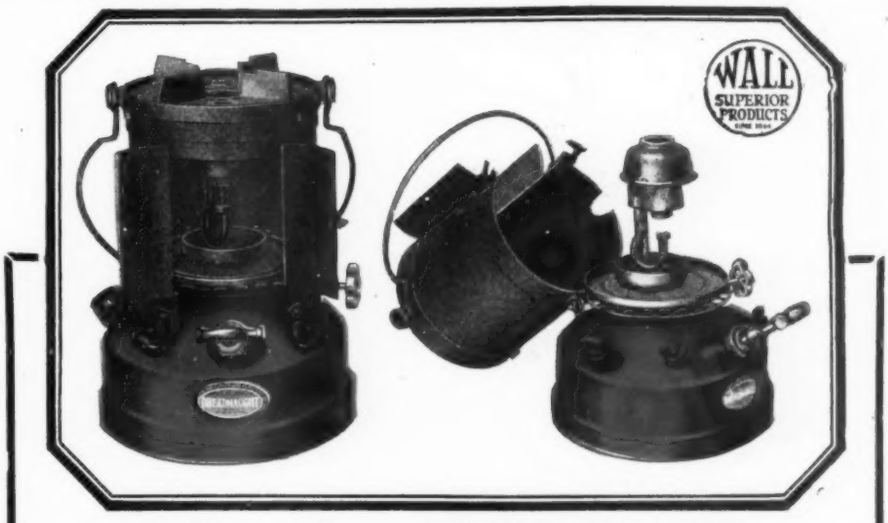

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FOR SALE—Monarch 50 line, desk type switchboard, 5 per strip, good condition; also Monarch drops and jacks, 10 per strip, $14.00. G. W. Beach, Box 146, Cedar Rapids, Iowa.

FOR SALE—Latest Type No. 2000, Kellogg, Line, Cutoff, Cord & Trunking Relays, $1.00 per pair, with cover, code numbers and samples on request WHITTIER HOME TEL. & TEL. CO., 117 N. Bright Avenue, Whittier, Calif.

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March 10: Application filed by Leigh Telephone Co. for authority to publish a rate of 75 cents a month for extension sets for business service, 50 cents for residence extension and 25 cents for extension bells.

March 10: In the matter of the application of the Lincoln Telephone & Telegraph Co. for authority to issue $1,000,000 16-year 5 per cent bonds; found necessary for purposes of the corporation, and authority asked granted, with proviso that on July, 1930, a full report of the disposition of the proceeds be filed.

March 10: In the matter of the application of the Hamilton County Farmers' Telephone Association of Aurora, Neb., for authority to publish rate of 50 cents a month extra for cradle type installation, at its exchanges at Aurora, Doniphan, Giltner, Hampton, Stockham, Hordville, Marquette, Phillips and Trumbull; found reasonable, and order issued as prayed for.

March 14: In the matter of the application of the Lincoln Telephone & Telegraph Co. for authority to issue 10,000 shares of Class A 6 per cent preferred stock; it appearing that the bond market is much more favorable than when application was presented, and that the company has floated a bond issue of $1,000,000 at favorable terms, it asks to and is permitted to reduce the number of Class A shares for which authority is desired; it further appearing that the issuance and sale of 2,000 shares of such stock at $100 less ordinary selling costs is necessary for proper financing of the company's reconstruction and new construction program for 1930, authority should be and is hereby granted to make such sales of stock in the manner and form asked.

March 16: In the matter of the application of the Lincoln Telephone & Telegraph Co. for authority to increase its rural metallic rate at its Edgar exchange; it appearing that the company desires to supply to rural subscribers only this form of service and it being a matter within the powers of the company as a public utility to choose what service it will offer, all objections filed in the case are overruled; it further appearing that the company is entitled to an increased revenue at this exchange, the application is granted as asked, with the proviso attached that as the subscribers are being discriminated against with respect to free service to the county seat, accorded all other company exchanges in the county, free service to Clay Center shall hereafter be furnished.

NEW YORK.

March 17: Hearing in matter of complaint of William B. Aldridge of New York City against the New York Telephone Co. as to service and certain charges.

March 19: Hearing on motion of the commission as to rates, charges, rentals, regulations and practices affecting the rates, charges and rentals of the New York Telephone Co.

March 14: The New York Telephone Co. authorized to issue $90,700,000 additional capital stock, of which $20,700,000 will be used for the liquidation of indebtedness and $70,000,000 to reimburse expenditures from income.

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W1.
Anchors
C7, E4, G2, K1, K4, M6, S10.
Appraisers
P5, U4, W3.
Arms and Brackets (for Holding Telephones)
A4, H7, K1.
Arresters, Lightning (See Protective Devices)
Auditing, Accounting and Systems
B11, C19, H6, S10.
Automatic Telephones
A9, A12, E5, K1, N2, S6, S12.
Battery Charging Equipment
F1, F6, G5, U5, W7.
Batteries, Dry General Purpose
A4, B4, C2, G1, N1, W9.
Batteries, Dry, Radio "A," "B" and "C"
A4, C2, F6, G1, N1.
Batteries, Flashlight
F6, G1, N1.
Batteries, Primary
W9.
Batteries, Storage
A14, E3, K1, P9, P5, U5.
Bells, Magneto
A4, G2, H5, K1, N2, S4, S10.
Belts and Safety Straps (Linemen's)
K3.
Blank Books (etc.)
F3.
Blowers, Portable
H8.
Books, Telephone
M8.
Brushes—Carbon—Graphite and Metal Graphite Motors, Generators and Rotary Converters
N1.
Brackets, Drop-Wire
P8, S10.
Cable
A5, B6, E5, H1, K1, R3, S10.
Cable Compound
A7, N10.
Cable Rings
E4, N5.
Cable Splicing Joints
M6.
Cable Terminals
C8, G2, R2, S2, S10.
Clamps, Ground (Plates, Cones)
G2, L2, P2.
Clamps, Guy
A7, C8, E4, G2, L2, M6, N5, R3.
Climbers
G2, C12, K3.
Clips, Cable
A4, G2, L2, M6.
Clips, Testing
F5, G3.
Condensers
A4, A9, G2, K1, L2, S9, W3.
Conduit, Clay
C6, N3.
Conduit, Treated
C13, G2, W6.
Conduit Rods
C9, G2.
Connectors, Test
C8, R2, S8.
Cords, Telephone and Switchboard
A4, A9, G2, K1, R5, S9.
Counters
V3.
Cross Arms
A4, A10, A11, G4, K1, S10, W6.
Directory Publishing and Advertising Service
B7.
Electrical Wires and Cables
R3.
Extension, Relays
K1, S4.
Engineers, Telephone
B1, C10, F4, J3, M4, P5, S7, U4.
Financial Service
A8, C11, C15, K2, M7, P3, R5, T1, U4, W5.
Fire Pots and Furnaces
W4.
Furnaces, Lead Melting
L4.
Furnaces, Compound
L4.
Fuses, Mica
A4, C8, R2.
Generators, Ringing
G2, H5, K1, L3.
Generators, Portable
H8.
Guy Stretchers
H3.
Hangers, Cable
C8, E4, G2, K1, L2, N5, R2, S1.
Hoist and Guy Clamps
C3.
Induction Coils
A4, A5, K1, L3, M6, S3.
Instruments, Electrical Measuring
W1.
Insulators
C16, G2, H2, P2, S10, T3, U1.
Insulating Compounds
N10, S7.
Insurance, Fire and Employers' Liability
B10.
Intercommunicating Systems
A4, K1, S9.
Jacks, Pole
A4, C9, G2, K1, S9, S10, T2, W3.
Keys, Switchboard
A4, K1, L3, S9.
Lockers, Steel
L5.
Meters (Electrical Testing and Measuring)
G2, S3, W1.
Pliers
A4, C12, F7, G2, K1, K3.
Pole Line Hardware
A4, G2, K1, L2, N5, O1, S10, W3.
Pole Pullers
G2, T2.
Pole Straighteners
G2, T2.
Pole Steps
G2, L2.
Poles, Treated or Plain
A2, A11, B3, B5, C5, F8, I3, K7, L1, M1, N6, P1, P3, P4, S5, T6, W6.
Printed Telephone Forms
F8, S10.
Protective Devices
C3, C8, M3, R2, S2.
Pumps, Centrifugal Portable
H8.
Radio Supplies
A4, K1, L3, S9.
Rebuilt Telephone Apparatus
B15, P6, R1, S10.
Rectifiers
F1, W7.
Relays, Loud Ringing Calling Systems, Signals
K1, N2, S4.
Reels, Pay-out and Takeup
M6.
Remote Control Systems
N2.
Ringing Machines
T3.
Searchlight, Portable
N4.
Shelving, Metal
L5.
Sleeves, Paper
C8, R2.
Soldering Supplies
K5.
Staples, Insulated
B9.
Switchboard, Lamps
N8.
Switchboards, Telephone
A4, A9, G2, K1, L3, N2, S9, S10, W3.
Tanks, Portable
P7.
Tape (Splicing)
G2, S9.
Telephones
A4, A9, G2, K1, L3, N2, S9, S10, W3.
Telephone Directories
B7, W5.
Telephone Supplies (Jobbers)
A4, G2, K1, S9.
Teletype
T4.
Telephone Typewriters
T4.
Telephone Wire (Copper & Galvanized)
R3.
Tents, Aerial Splicer.
U2.
Testing Sets
A4, H1, M6, S8, W1.
Timing Devices
C1, E5.
Tool Boxes, Steel
L4.
Torches, Blow
B3, P7, W4.
Transmitters
A4, A9, G2, K1, L3, S9, W3
Tree Surgeons
D1.
Tree Trimmers
G2, S3.
Trench Braces
T2.
Trench Diggers
C4.
Trucks, Motor
F2, I4.
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C9, G2, N10.
Winches
C9, G2.
Wire, Aeroplane
A4.
Wire, Copper
A3, A4, A5, A7, I1, K1, R3, S9, S10.
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A5, A7, G2, H1, K1.
Wire, Galvanized Iron
A5, A7, G2, H1, I1, R3, P2, S10.
Wire Rope
A7, G2, R3.
Wire, Rubber Covered
A7, H1, W8.
Wire, Rubber Insulated
A2, A7, H1.
Wire, Twisted Pair
A5, G2, P2.
Wire, Weatherproof
A4, A5, A7, G2, I1, P2.
Wrench, Pipe Anchor
K4.
Zinc Meta Arsenite
C13.

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